#1 IGF-1 REDUCES Atherosclerosis by Reducing CXCL12

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**Purpose of Study**
Atherosclerosis is the leading cause of Cardiovascular Disease, which is still the global leader of mortality. Insulin Like Growth Factor I (IGF1) has been shown to reduce cardiovascular events. IGF1 administration in ApoE deficient (Apoe-/-) mice fed a high fat diet reduced atherosclerosis and reduced plaque macrophages. Results of our previous in vitro experiments suggest that macrophages play a predominant role in mediating IGF1 effects in atherosclerotic plaque, but exact mechanisms remain unclear. We hypothesized that increasing IGF1 levels strictly in macrophages will prevent atherosclerosis.

**Methods Used**
After breeding a novel macrophage-specific IGF1 overexpressing transgenic mouse to an Apoe -/- background (MF-IGF1 mice), we assessed atherosclerotic plaque burden, stability, and monocyte recruitment. We accelerated atherosclerotic development by feeding animal a high fat diet for three months. We also assessed cholesterol efflux and foam cell formation in vivo and in vitro.

**Summary of Results**
Macrophage IGF1 overexpression downregulated plaque burden by 30%, reduced plaque macrophages by 47%, and promoted features of a stable plaque phenotype. Monocyte recruitment was reduced by 70% in MF-IGF1 mice and was associated with a 27% reduction in circulating levels of CXC Chemokine Ligand 12 (CXCL12). CXCL12 protein levels were reduced in plaque and peritoneal macrophages in MF-IGF1 mice. IGF1 completely blocked oxidized low-density lipoprotein (oxLDL)-dependent increase of CXCL12 mRNA transcription (98% reduction, P<0.01) and IGF1 treatment reduced CXCL12 protein (56% decrease, P<0.001) in vitro.

ATP-binding cassette transporter A1 (ABCA1) is the key cholesterol transporter mediating macrophage cholesterol efflux and CXCL12 reduces its expression. We found that peritoneal macrophages isolated from MF-IGF1 mice have a 2-fold increase in ABCA1 protein levels. We loaded peritoneal macrophages with oxLDL to measure changes in cholesterol efflux and found that MF-IGF1 mice have a 42% increase in efflux. We also found a 27% increase in cholesterol efflux in IGF1 (100 ng/mL) treated THP-1 cells with Apolipoprotein AI as a cholesterol acceptor.

**Conclusions**
Our results indicate that macrophage IGF1 reduces atherosclerosis and decreases CXCL12, a chemokine newly implicated in atheroprogession. IGF1 potentially exerts its atheroprotective effect via this reduction in CXCL12 by reducing monocyte recruitment and by increasing ABCA1, thereby increasing cholesterol efflux capacity.

#2 ASSOCIATION OF TRANSTHYRETIN VAL122ILE VARIANT WITH INCIDENT HEART FAILURE AND MORTALITY AMONG BLACK AMERICANS: INSIGHTS FROM THE REGARDS STUDY

Parcha*, Mallia, Irvin, Armstrong, Judd, Lange, Maurer, Goyal, Levitan, Arora, Arora.
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**Purpose of Study**
Genetic mutation in the TTR gene (rs76992529; Val122Ile) seen exclusively in individuals with African ancestry (population frequency: 3–4%) causes misfolding of the tetrameric transthyretin protein complex that accumulates as extracellular amyloid fibrils seen in hereditary transthyretin amyloidosis (hATTR). Estimation of the effect of
this amyloidogenic TTR variant on the risk of heart failure (HF) and all-cause mortality in a large, geographically diverse cohort of Black Americans may provide insight into the clinical significance of this variant. We evaluated the Black participants from the Reasons for Geographic and Racial Differences in Stroke (REGARDS) study to examine the association of TTR Val122lle mutation with HF and all-cause mortality.

Methods Used We evaluated self-reported Black American participants of the REGARDS study without HF at baseline. Poisson regression was used to estimate the rates of incident HF and all-cause mortality. We used multivariable-adjusted Cox regression models accounting for demographic, clinical, and social factors, and genetic African ancestry to assess the risk of incident HF and all-cause mortality among those carrying TTR Val122lle genetic variation compared with those without the variation.

Summary of Results Among 7,514 Black participants (median age: 64 years; 61% females), the population frequency of the TTR Val122lle variant was 3.1% (232 carriers; 7,282 non-carriers). The incidence of HF (per 1000 person-years) was 15.9 (95% CI: 11.5–21.9) among variant carriers and 7.2 (95% CI: 6.6–7.9) among variant non-carriers. Val122lle variant carriers had a higher risk of incident HF (HR: 2.46 [95% CI: 1.72–3.53]; P<0.0001) compared with non-carriers. The incidence of all-cause mortality (per 1000 person-years) was 41.5 (95% CI: 34.6–49.7) among variant carriers and 33.9 (95% CI: 32.7–35.2) among variant non-carriers. Val122lle variant carrier had a higher risk of all-cause mortality (HR: 1.44 [95% CI: 1.18–1.76]; P=0.0004) compared with non-carriers. There was no interaction between TTR variant carrier status and sex on HF and all-cause mortality outcome.

Conclusions In a large cohort of Black Americans, we demonstrate that the amyloidogenic Val122lle mutation in the TTR gene is associated with a ~2.5-fold higher risk of HF and a ~40% higher risk of all-cause mortality. With the advent of numerous hATTR therapies, the presence of TTR Val122lle mutation seen commonly in those with African ancestry may be deemed clinically actionable and prompt an early access to therapy.

Methods Used Our bioinformatics study with the murine Npr1 promoter has shown presence of 4 vitD response elements (VDRE) in the region -583 to -495 from the transcription start site having perfect and VDRE-like consensus sequence. To delineate the mechanisms of the regulation of the promoter activity of Npr1 promoter deletion constructs were transiently transfected in cultured rat thoracic aortic smooth muscle cells (RTASMCs) and mouse mesangial cells (MMCs) and the transcriptional activity was measured dual luciferase assay kit.

Summary of Results Luciferase assays demonstrated that treatment with Vitamin D3 (1α, 25-dihydroxy; VD3) enhances Npr1 promoter activity by more than 6-fold in a dose-dependent manner. Western blot and densitometry analysis showed increasing concentrations of VD3 significantly induced NpR1 protein levels by 3.5-fold in MMCs and 4.7-fold in RTASMCs and maximum effect was observed at 100 nM. VD3 increased protein levels of vitD receptor (VDR) in a dose-dependent manner. There was 50% inhibition of histone deacetylase (HDAC) activity in presence of VD3 as measured by HDAC activity/inhibition ELISA kit. Moreover, treatment with VD3 reduced class I HDAC enzymes, HDAC1 and HDAC3 protein levels and dose-dependently enhanced acetylation level of histones, H3 at lysine residues 9 and 14 (H3-K9/14 ac) and H4 at lysine residue 12 (H4-K14ac).

Conclusions The results demonstrate that VD3 regulate Npr1 gene expression epigenetically by modulation of histone modifications. The identification of epigenetic targets of vitamin D signaling as a regulator of Npr1 gene transcription and protein expression will have important implications in hypertension and cardiovascular regulation.
Purpose of Study Coronavirus disease (COVID-19) can range from asymptomatic infection to severe illness with multiorgan failure. Recent studies demonstrated an association between lower serum lipid levels namely high-density lipoprotein (HDL), low-density lipoprotein (LDL), and total cholesterol (TC) and COVID-19 disease severity. But the results lack consistency, and the magnitude of the association is currently unknown.

Methods Used We conducted a systematic review and meta-analysis on the difference in HDL, LDL, TC, and triglycerides (TG) levels between 1) COVID-19 patients and healthy controls 2) COVID-19 patients with and without severe disease 3) COVID-19 patients who died and who survived. We included articles from PubMed and Embase up to September 1, 2021. We analyzed the pooled mean differences (pMD) in lipid levels (mg/dL) for the above-mentioned groups using random effects meta-analysis and assessed publication bias using funnel plots.

Summary of Results Among the 441 articles retrieved, 29 articles (26 retrospective and 3 prospective cohorts) met the inclusion criteria with an aggregate of 256,721 participants. Patients with COVID-19 had lower HDL (pMD = -6.95), and TC (pMD = -14.9) levels (table 1 and figure 1). There was no difference in LDL and TG levels among patients with and without COVID-19. Patients with severe COVID-19 had lower HDL (pMD = -4.4), LDL (pMD = -4.4), and TC (pMD = -10.4) levels compared to non-severe COVID-19 patients. Patients who died had lower HDL (pMD = -2.5), LDL (pMD = -10.6) and TC (pMD = -14.9) levels. TG levels did not differ with COVID-19 severity or mortality. None of the above analyses showed statistically significant publication bias.

Conclusions Our analysis demonstrated lower lipid levels in COVID-19 patients compared to healthy controls. Among COVID-19 patients, lower HDL, LDL, and TC levels were associated with severity and mortality. We believe that reduced lipoprotein levels are secondary to systemic inflammation and hepatic dysfunction. Lipid levels could be explored as potential prognostic factors in patients with COVID-19.
Purpose of Study Atrial and brain natriuretic peptides (ANP and BNP) are circulating hormones of cardiac origin that play pivotal roles in regulating blood pressure and fluid homeostasis through vasodilatory and diuretic actions and improve cardiac remodeling. Both ANP and BNP act by binding to the transmembrane guanylyl cyclase/natriuretic peptide receptor-A (GC-A/NPR-A). Systemic disruption of Npr1 gene (encoding GC-A/NPR-A) leads to volume overload, high blood pressure, and congestive heart failure. However, the underlying mechanisms are not yet precisely determined. The aim of this study was to investigate whether Npr1 plays a critical role in regulating glucose homeostasis in Npr1 gene-disrupted mice.

Methods Used The adult male and female (16-18 weeks) Npr1 gene-knockout haplotype (Npr1+/−, 1-copy), wild-type (Npr1+ +/+, 2-copy), and gene-duplicated (Npr1+ +/+ +, 4-copy) mice were fasted for 16 hours and given free access to water. The administrated of glucose was done both orally and intra-peritoneally (2 g/kg body weight) in mice to determine oral glucose tolerance test (OGTT) and intraperitoneal glucose tolerance test (IPGTT). The glucose levels in blood were determined by performing tail bleeds at 0, 15, 30, 60, 90, and 120 min using the AlphaTRAK blood glucose monitoring system (Zoetis Inc, Kalamazoo, MI). Systolic blood pressure (SBP) was determined by non-invasive computerized tail-cuff method (Visitech 2000).

Summary of Results The results showed that the blood glucose level was elevated to the maximum value at 15 min after glucose (2 g/kg body weight) administration and declined to near basal level at 120 mins in 2 copy mice (OGTT: 101 ± 4 mg/dL in male and 98 ± 3 mg/dL in female, IPGTT: 100 ± 3 mg/dL in male and 97 ± 4 mg/dL in female), whereas in 1-copy mice, the blood glucose levels remained elevated even after 120 mins (OGTT: 244 ± 6 mg/dL in male and 220 ± 4 mg/dL in female, IPGTT: 250 ± 5 mg/dL in male and 225 ± 6 mg/dL in female) when compared with 2-copy mice. The blood glucose levels were also significantly lower at 120 mins in 4-copy mice (OGTT: 78 ± 3 mg/dL in male and 73 ± 2 mg/dL in female, IPGTT: 76 ± 4 mg/dL in male and 70 ± 3 mg/dL in female) compared with 2-copy mice. SBP was significantly greater in 1-copy mice (134 ± 3 mmHg in male and 125 ± 3 mmHg in female) than 2-copy mice (101 ± 2 mmHg in male and 92 ± 2 mmHg in female). Similarly, SBP was also significantly lower in 4-copy mice (85 ± 3 mmHg in male and 78 ± 2 mmHg in female) than 2-copy mice. OGTT showed a significantly lower level of maximal blood glucose compared with IPGTT.

Conclusions The present findings showed that Npr1 markedly prevented a steep rise of blood glucose levels after glucose challenge and ameliorated glucose intolerance in wild-type and gene-duplicated mice, suggesting that Npr1 plays a critical role in the regulation of glucose levels and the loss of Npr1 exerts detrimental effects on renal and cardiac functions in mutant mice. This work was supported by NIH grant (HL062147).
#8 A RETROSPECTIVE ANALYSIS OF MORTALITY IN ADULT PATIENTS WITH ACUTE CORONARY SYNDROME AND CARDIOGENIC SHOCK REQUIRING TEMPORARY MECHANICAL CIRCULATORY SUPPORT

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10.1136/jim-2022-SRMC.8

Purpose of Study Despite the technical advances in cardiology, cardiogenic shock as a complication of acute myocardial infarction remains a medical challenge. Recently there has been a movement to standardize cardiogenic shock management across the United States with the National Cardiogenic Shock Initiative aiming to improve survival, particularly in acute coronary syndrome patients (ACS). We aim to determine how cardiogenic shock secondary to ACS that required mechanical circulatory support is managed in our institution and compare the clinical characteristics between survivors and non-survivors.

Methods Used A retrospective study of patients 18–89 years old who required temporary mechanical circulatory support in the setting of ACS from August 2018 to August 2019 at University Medical Center at Lubbock, Texas. A comparison between survivors and non-survivors to discharge was done. Fisher’s Exact test and Wilcoxon Rank-Sum test were used for categorical and continues variables.

Summary of Results A total of 39 patients were included, 90% males, the mean age was 62 years, had diabetes, and the mean body mass index was 29.01 ± 5.84 kg/m². Intra-aortic balloon pump was the most commonly used mechanical support device, followed by Impella (92% vs 8%). Total mortality was 18%. Elevated heart rates during mechanical support use and lactate at admission were associated to mortality (105 bpm vs 83.91 bpm, p=0.02) (6.85 mmol/l vs 2.55 mmol/l p=0.003).

Mechanical support prior to percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG) was done in 44% of the patient, and its presence was associated to survival (53% vs 0% p=0.01).

Conclusions Elevated heart rates during mechanical support placement and lactate levels are associated with mortality in patients with cardiogenic shock secondary to an acute coronary syndrome. The initiation of mechanical support prior to PCI was associated to survival. Larger more rigorous studies are needed to clarify these association.

Adult clinical symposium

12:00 PM

Thursday, February 10, 2022

#9 REFRACTORY HIDRADENITIS SUPPURATIVA, CLINICAL RESPONSE USING SUPERFICIAL RADIATION THERAPY

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10.1136/jim-2022-SRMC.9

Case Report Managing hidradenitis suppurativa (HS) can be challenging. In many cases after initial conservative intervention, patients experience improvement in symptoms. Unfortunately, some cases become refractory and result in cosmetically challenging and painful recurrences. Surgery is often used to debride or excise affected tissue which can facilitate healing. We present the case of a patient refractory to surgical intervention who was approached with superficial electron beam radiation therapy.

Case A 44 year-old male presented with diffusely thickened buttoks, gluteal cleft, perineum, and bilateral thighs. The patient was refractory to surgical debridement and medical management via antibiotics and corticosteroids. He was treated with split course electron beam radiotherapy, using a total dose of 30 Gray in 10 fractions and sustained a partial response within 2 weeks from initiation of treatment. Objective physical exam within one month of treatment showed a 25% decrease in total area of inflammation, with significant flattening of raised areas. At that time, the patient reported subjective decrease in pain and drainage. The response was deemed durable at 6 and 12 months post-treatment.

Discussion Radiation therapy has anecdotal benefit for a variety of benign conditions and has been studied in low doses, sometimes single fraction delivery in the management of HS. We opted to use a split course which we believed was safest in mitigating side effects and potentially most durable.

Conclusion Superficial electron beam radiotherapy is effective in the management of benign conditions and has promise for refractory HS. Total dose and fractionation schedules need to be studied to optimize and guide future use.

#10 MITOCHONDRIAL MYOPATHY MIMICKING GUILLAIN-BARRE SYNDROME IN A 21-YEAR-OLD GRADUATE STUDENT

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10.1136/jim-2022-SRMC.10

Case Report Mitochondrial myopathies occur in one out of 5000 people in the general population of the United States. Clinical manifestations can be broadly classified into three categories: chronic progressive external ophthalmoplegia, skeletal muscle-CNS syndromes, or pure myopathy. Cardiac abnormalities occur in 30–32% of cases, mostly in the form of hypertrophic cardiomyopathy, dilated cardiomyopathy, or conduction...
abnormalities. We present a case of bilateral lower limb weakness, pain, and swelling diagnosed with mitochondrial myopathy on muscle biopsy. CASE DESCRIPTION: A 21-year-old male graduate student was referred to our hospital with a 3-week history of weakness, pain, and swelling in both legs which began after he arrived in the United States from India. Examination revealed tachycardia, bilateral 2+ pitting edema to his knees, 4/5 MRC grade weakness and mild tenderness of his upper and lower extremity proximal and distal muscle groups, absent deep tendon reflexes, foot drop, bilateral ptosis and limited extraocular movements. Initial laboratory results revealed elevated creatinine kinase of 691 IU/L, brain natriuretic peptide of 3437 pg/mL, troponin of 47.1 ng/mL, myoglobin of 195 ng/mL, lactic acid of 7.7 mmol/L, and reduced serum bicarbonate of 12 mmol/L. Due to a traumatic tap, the lumbar puncture results for suspected Guillain-Barre syndrome were unreliable. An electrocardiogram showed left axis deviation with left anterior fascicular block. Chest x-ray and CT angiography of the chest/abdomen/pelvis showed cardiomegaly and volume overload. His bedside ECHO revealed mild left global hypokinesia, with reduced ejection fraction of 40–44%, and mild pulmonary hypertension. Due to declining maximal inspiratory pressures, the patient was admitted to the medical intensive care unit. Ophthalmology confirmed ophthalmoplegia and ruled out cranial nerve palsy, myasthenia gravis, and retinitis pigmentosa. Gq1b antibody was negative. Extensive autoimmune and infectious work-up was non-contributory. A muscle biopsy from the patient’s rectus femoris revealed scattered ragged-blue and cytochrome-c oxidase negative fibers with increased perimysial and endomysial connective tissue, consistent with active and chronic primary mitochondrial myopathy. Endomyocardial biopsy results revealed active lymphocytic myocarditis. The patient has been treated successfully with furosemide, metoprolol, and methylprednisolone.

**DISCUSSION** Myopathies should be considered in the differential diagnosis of patients in whom Guillain Barre syndrome is suspected. We report an interesting case of myopathy with prominent cardiac manifestations. Myositis presenting with myocarditis should raise suspicion for mitochondrial disease. Our experience stresses the importance of using an inter-disciplinary team approach to diagnose uncommon pathologies with widely variable multi-systemic involvement.

**Abstract #11 Table 1** Hemoglobin and blood pressure trends in case subject

<table>
<thead>
<tr>
<th>Date (mm/dd/yy)</th>
<th>08/28/</th>
<th>06/06/</th>
<th>07/21/</th>
<th>07/23/</th>
<th>08/29/</th>
<th>05/26/</th>
<th>04/05/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin (gms/L)</td>
<td>12.7</td>
<td>12.8</td>
<td>13.5</td>
<td>13.7</td>
<td>13.6</td>
<td>13.3</td>
<td>13.1</td>
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<tr>
<td>(Normal 13.7–17.5)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Blood Pressure (mmHg)</td>
<td>132/91</td>
<td>152/101</td>
<td>137/90</td>
<td>128/94</td>
<td>133/84</td>
<td>137/85</td>
<td>155/83</td>
</tr>
</tbody>
</table>

The patient reported a history of low testosterone for 12 years. However, he had not used any testosterone supplementation for the last nine months. He reported daytime fatigue, frequent bouts of nighttime awakenings, and frequent snoring. The patient never had a sleep study or used a CPAP. The patient used half a can of chewing tobacco daily for thirteen years, and he smoked one pack per day for ten years but quit 12 years ago. He worked strenuous jobs in the construction industry most of his life.

On this admission, the patient’s lab work was notable for hemoglobin of 18.7 g/dL (13.7–17.5) and a normal erythrocytosis level of 5.7 MLL/mL (2.6–18.5) without thrombocytosis or leukocytosis and a positive factor V Leiden mutation. His blood pressure was 132/91 mmHg. On review of previous records, the patient was found to have consistently elevated hemoglobin The patient had a stocky, ruddy appearance without hepatosplenomegaly.

**Conclusion** Erythrocytosis can be categorized as primary, secondary, or relative. Patients with relative erythrocytosis have a decreased plasma volume with a relative increase in hemoglobin. Additionally, elevated hemoglobin levels have been associated with hypertension. Gaisbock’s syndrome, first described in 1905, is characterized by hypertension and erythrocytosis without splenomegaly, leukocytosis, or thrombocytosis. It is associated with mild obesity, elevated blood pressure, and increased blood viscosity, which may explain why these patients often develop cardiovascular complications. Patients with relative erythrocytosis are at a higher risk for thromboembolic complications. In this case, Gaisbock’s syndrome was suspected because the patient had had a stocky, pheochromocytoma-like appearance with persistently elevated hemoglobin and blood pressure with a normal erythrocytosis level. Gaisbock’s syndrome establishes a relationship between benign erythrocytosis, hypertension, and an increased risk for cardiovascular events.

**Case Report** The purpose of the study is to explore the possible diagnosis of Gaisbock in a patient with long-standing erythrocytosis and hypertension.

**Methods Used** Case Study

**Summary of Results** A 40-year-old Caucasian man with obesity was admitted with recurrent leg swelling and increasing oxygen requirements two weeks after hospitalization with COVID-19 pneumonia. Upon review of the patient’s history, he was found to have untreated hypertension over several medical encounters and an erythrocytosis spanning ten years. Recent medical history included a diagnosis of deep vein thrombosis (DVT) in the same leg two and a half months prior and was treated with Xarelto.

**Abstract #12** SARCOMA OF THE HAND

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**Case Report** A 62-year-old female with a past medical history of hypertension presented to the emergency department with a large, ulcerating mass on the dorsal aspect of her left hand. The patient reported the mass first appeared about two months prior to presentation and had been rapidly enlarging within the past week. The patient also

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*Abstracts*
Case Report
The presence of chronic osteomyelitis may obscure the diagnosis of Marjolin ulcer. The present case report highlights this unique presentation to raise reasonable clinical suspicion and prevent missed diagnoses.

A 67-year-old woman with a past medical history of Crohn’s disease and multiple skin neoplasms was initially seen by dermatology for a nonhealing tibial wound. While an initial shave biopsy was nonmalignant, a repeat biopsy six months later revealed indeterminant pathology. At this time, she was referred to plastic surgery for an excisional biopsy. At presentation to plastic surgery, a nonhealing tibial wound with bone visible through a draining sinus tract was apparent within the boundaries of a previously healed scar. She reported a remote history of an open compound fracture requiring multiple surgical operations in the vicinity of the lesion. An X-ray obtained to assess any residual hardware demonstrated findings consistent with osteomyelitis.

Excisional biopsy revealed superficially invasive squamous cell carcinoma, consistent with a Marjolin ulcer. At the time of her initial operation, a satellite lesion was identified and biopsied, revealing squamous cell carcinoma in situ. Marrow edema was observed in the screw path associated with hardware from her prior operations. Integra dermal substitute was placed while awaiting pathology results. Biopsy and culture of the affected bone revealed chronic osteomyelitis growing Staphylococcus lugdunensis. The patient returned to the OR for full excision of the satellite lesion along with corticotomy and sequestrectomy of the affected bony tissue. A cement spacer with vancomycin and tobramycin was also placed at this time. Definitive coverage of the tibial defect was obtained with a soleus myocutaneous flap and split-thickness skin graft. Six weeks of outpatient cefazolin administration was arranged following discharge due to her chronic osteomyelitis.

Chronic immunosuppression, chronic infection, and multiple cutaneous neoplasms may be independently associated with the development of Marjolin ulcers. In the setting of atypical wound behavior, particularly when associated with these factors, clinical suspicion of secondary malignancy must remain high – even with prior negative biopsies and strong clinical evidence of an alternative diagnosis.

A CASE OF HERPES ZOSTER NEUROPATHY WITH LIMB PARALYSIS

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10.1136/jim-2022-SRMC.14

Case Report
Varicella zoster virus lies dormant in the spinal dorsal root ganglia until reactivation occurs and causes Herpes zoster. With pain being the most common complication of Herpes zoster, other, more rare manifestations can be looked over. Segmental zoster paresis occurs in around 3% of patients. VZV can spread from the dorsal root to the neighboring ventral root and cause subsequent motor weakness. This usually occurs in the same anatomical region as the...
presenting rash, but the two can rarely be dissociated. The majority of patient who develop segmental zoster paresis have a good prognosis and will recover all function after three to six months.

Case Report A 78-year-old female who came to the hospital with altered mental status that was found to have right arm paralysis after resolution of her encephalopathy. Magnetic resonance imaging of the brain showed no acute infarction. The patient had been diagnosed with Herpes zoster and prescribed gabapentin three days prior to admission with characteristic vesicular rash eruption present on the right upper extremity. Segmental zoster paresis was suspected at this point. She was started on IV acyclovir, and physical therapy was consulted. The patient remained hospitalized for 3 weeks awaiting discharge to inpatient rehab in which time she performed daily strength exercises for her arm. IV acyclovir was given for 21 days. The rash resolved, and the patient was discharged to inpatient rehab for two weeks where she was recommended by PT to perform three hours of intensive therapy per day. After 3 months of physical therapy, the patient’s motor function had improved significantly and full motor function was noted a year after her presentation on follow up.

Discussion Herpes zoster is a common disorder seen in older adults. Although we tend to focus on the associated pain, we must remember other possible manifestations that can occur during or after the initial rash presentation. Segmental zoster paresis should be suspected in any patient with paralysis and recent diagnosis of shingles.

Spontaneous diabetic myonecrosis is a rare complication of diabetic mellitus. The pathogenesis is uncertain. Patients usually present with swelling and pain. The most common affected area is the front of the thigh, followed by the back of thigh or calf. Awareness of the syndrome will frequently suggest the diagnosis and laboratory and imaging studies can be used to exclude other diagnoses. Interestingly, creatinine kinase is normal in many patients. MRI may show high intensity in the involved muscle on T2-weighted sequences as well as subcutaneous edema and subfascial fluid. MRI with contrast is the diagnostic tool of choice which can distinguish nonenhancing infarcted muscle from surrounding inflammation or edema. Muscle biopsy is not necessary; it is indicated only when the diagnosis remains in doubt or when infection cannot be excluded by other investigative techniques. Treatment includes rest, analgesia, low-dose aspirin, and optimal glycemic control. Complications including compartment syndrome and secondary infections are reported in some patients. Resolution usually takes weeks to months in most patients with recurrence reported in approximately 40% of patients and often involves the contralateral side.

Case Report A Rare case of Henoch-Schonlein purpura in 80 years old man

Introduction Henoch-Schonlein Purpura (HSP) is a small vessel vasculitis mediated by IgA-immune complex deposition. It is characterized by non-thrombocytopenic palpable purpura, abdominal pain, arthritis, and renal involvement. Pathologically, it can be considered a form of immune complex-mediated leukocytoclastic vasculitis (LCV) involving the skin and other organs. Though it primarily affects children (over 90% of cases), the occurrence in adults has been rarely reported.

Case This is an 80-year-old gentleman with CKD stage IV, coronary artery disease, status post stent placement, who presented with upper extremities pain, mild swelling, and a subsequent development of palpable rash that spread on the lower extremities while being nonpainful and with no itch. He had mild proteinuria and microscopic hematuria notable in his urinalysis. Further deterioration of his kidney function was noted with normal complement levels and ANCA panel. TEE ruled out infective endocarditis vegetations. The patient developed NSTEMI during his hospital stay prompting a percutaneous coronary intervention of the right coronary and left circumflex arteries. A kidney biopsy was positive for IGA nephropathy with less than 50% interstitial fibrosis and more than 50% glomerular sclerosis. High dose steroids were initiated with intermittent hemodialysis and plasmapheresis. The rash and joint pain improved completely while his residual kidney function remained stable. There was no immediate

Abstracts

#15 SUGAR ALSO ROT YOUR MUSCLES, NOT JUST YOUR TEETH: A 27-YEAR-OLD FEMALE WITH POORLY CONTROLLED DIABETES WITH LEG PAIN

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10.1136/jim-2022-SRMC.15

Case Report Diabetes mellitus is a chronic disease with the potential for significant morbidity and mortality. Here we present spontaneous diabetic myonecrosis, a rare complication of diabetes mellitus, in a patient with CF.

A 27-year-old female with past medical history of CF, cystic fibrosis-related diabetes mellitus, diabetic retinopathy, exocrine pancreatic insufficiency presented to the hospital with severe right calf pain for 2 months associated with swelling. She denied trauma or fever. Physical examination revealed right calf swelling and exquisite tenderness to palpation, no erythema or warmth, 2+ dorsalis pedis and posterior tibial artery pulses with intact sensation. Labs revealed blood sugar at 785 mg/dL, moderate acetonemia, pH 7.389, and glycated hemoglobin 14.9%. Creatinine kinase and thyroid stimulating hormone were unremarkable. Ultrasound of lower extremities showed no evidence of deep vein thrombosis, and X-ray of the right leg was unremarkable. Magnetic resonance imaging (MRI) right leg showed nonspecific myositis noted throughout the calf with areas of nonenhancement and soft tissue edema. The Patient was diagnosed with mild diabetic ketoacidosis and diabetic myonecrosis of the right calf. DKA was treated per protocol, low-dose aspirin was started, and symptomatic treatment was given with pain control for diabetic myonecrosis. Patient improved with no further complications.

#16 A RARE CASE OF HENOCHSCHONLEIN PURPURA IN 80 YEARS OLD MAN

KN Abdelmalek*, A Roy, T Naguib, I Mohammed. Texas Tech University Health Sciences Center School of Medicine Amarillo, Amarillo, TX

10.1136/jim-2022-SRMC.16

Case Report A Rare case of Henoch-Schonlein purpura in 80 years old man

This is an 80-year-old gentleman with CKD stage IV, coronary artery disease, status post stent placement, who presented with upper extremities pain, mild swelling, and a subsequent development of palpable rash that spread on the lower extremities while being nonpainful and with no itch. He had mild proteinuria and microscopic hematuria notable in his urinalysis. Further deterioration of his kidney function was noted with normal complement levels and ANCA panel. TEE ruled out infective endocarditis vegetations. The patient developed NSTEMI during his hospital stay prompting a percutaneous coronary intervention of the right coronary and left circumflex arteries. A kidney biopsy was positive for IGA nephropathy with less than 50% interstitial fibrosis and more than 50% glomerular sclerosis. High dose steroids were initiated with intermittent hemodialysis and plasmapheresis. The rash and joint pain improved completely while his residual kidney function remained stable. There was no immediate
improvement of kidney function after the plasmapheresis course of 5 days.

Discussion and Conclusion HSP is a heterogeneous disorder manifesting in adults with palpable purpura/skin vasculitis, hematuria, and proteinuria. The diagnosis can be easily missed. Accordingly, a high degree of suspicion and attention to noninvasive laboratory work culminating into kidney biopsy with immuno-fluorescence studies is mandatory to establish the diagnosis. Skin biopsy and immunofluorescence confirm the presence of LCV with IgA deposition which is the pathognomonic finding in HSP. Adults with HSP carry a different prognosis, and the development of hematuria may be a harbinger for more serious complications such as nephritic or nephrotic syndrome. Malignancy is common in adult-onset HSP and imaging should be done to exclude this possibility.

Physicians should be aware of the possibility of HSP in patients who present with vasculitic rash and kidney disease. Normal complement level can distinguish between IgA nephropathy and vasculitis like granulomatosis with angitis and lupus erythematosus. Early diagnosis of HSP with kidney biopsy may improve the outcome.

#17 SPLINTER HEMORRHAGES IN THE PRESENCE OF PASTEURELLA MULTOCIDA BACTEREMIA

A Nguyen*, G Dharmapandi, A Dweik, J Dharmapandi, T Naguib. Texas Tech University Health Sciences Center School of Medicine Amarillo, TX.

10.1136/jim-2022-SRMC.17

Case Report To describe an unusual case of Pasteurella bacteremia

Methods Used Literature Review and Case Report

Summary of Results 71-year-old Caucasian male with end stage renal disease on peritoneal dialysis, atrial flutter, type 2 diabetes, ischemic cardiomyopathy with implanted CRT-D presented to the hospital with altered mental status with GCS 12. He had tachycardia, tachypnea, and fever with an erythematous, tender wound on left index finger. He had lacerated his finger prior to a pocket knife while cleaning dirt under his fingernail and failed cephalin and clindamycin oral therapies prior to admission. The patient pointed to the splinter hemorrhages seen on his right index finger as the ‘dirt’ he was attempting to remove on his left index finger with his pocket knife.

Intravenous broad spectrum vancomycin and piperacillin-tazobactam were initiated and subsequently blood cultures grew Pasteurella multocida. He lived on a farm with a cat. In view of the implanted cardiac device, fever and positive blood cultures, infective endocarditis was a concern. However, transthoracic echocardiogram did not reveal any vegetations. XR and bone scan imaging of his finger also ruled out osteomyelitis. During his four days in the hospital, his condition and laboratory results improved and he was asymptomatic. Follow up blood cultures were negative and patient was discharged home on oral amoxicillin clavulanate for another week duration.

Conclusions Pasteurella multocida is a commensal gram-negative bacteria seen in the mouths of many domesticated animals that is the most common cause of cellulitis after an animal bite. While it typically presents as soft tissue infections, it can more rarely cause meningitis, endocarditis, and bacteremia. It seems that contamination of the self-inflicted subungual minor wounds with cat saliva is what caused Pasteurella multocida bacteremia. The patient also presented with splinter hemorrhages. This physical exam finding is caused by rupture of capillaries underneath the nail plate. Blood attaches to the nail plate and moves distally as the nail grows, creating the characteristic linear pattern. While the association between splinter hemorrhages and endocarditis is often emphasized in medical training, they are present in other pathologies as well and in and of themselves do not constitute a criteria for endocarditis. They most commonly appear due to trauma, but are also seen in endocarditis, vasculitis, medications, and renal failure due to platelet dysfunction from buildup of uremic toxins as was likely the case in this patient. The patient was unlikely to have endocarditis since he became asymptomatic in 2-3 days and tested negative in repeat blood culture. Although a transthoracic echocardiogram would have been beneficial in definitively ruling it out infective endocarditis, a transthoracic echo of good quality is adequate especially in persons with prompt clinical improvement.

#18 SARS-COV-2 INDUCED PANCREATITIS

A Bonne*, F Ibrahim, W Walker. The University of Alabama at Birmingham School of Medicine Huntsville, Huntsville, AL.

10.1136/jim-2022-SRMC.18

Case Report SARS-CoV-2 Induced Pancreatitis

Introduction SARS-CoV-2 is responsible for the ongoing pandemic and has been the cause of 4.7 million deaths and 233 million infections worldwide. Although it primarily attacks the respiratory system, the extrapulmonary targets of the virus include the gastrointestinal tract and hematobiliary system, among others. We present a case of acute pancreatitis in a patient with SARS-CoV-2 infection without any other known causes.

Case presentation A 55-year-old male with a past medical history of coronary artery disease, hypertension, 0.5 pack per day tobacco use for 30 years, and hyperlipidemia presents to the emergency department with a chief complaint of left precordial and epigastric sharp pain radiating to the back associated with nausea and vomiting. He denied shortness of breath, cough, fever, or chills. COVID PCR testing was positive on admission, and the patient had not received the COVID vaccine. Heart Rate- 82 beats per minute, Respiratory Rate- 22 per minute, Blood Pressure- 154/95 mmHg, 100% Oxygen Saturation on Room Air. Physical examination was significant for epigastric tenderness. Laboratory results: Lipase- 395 U/L, Triglycerides-152 mg/dL, LDL-103 mg/dL, D-dimer- 0.67 mcg/mL. Normal troponin. CXR on admission showed mild patchy bibasilar infiltrates suggestive of developing pneumonia. Right upper quadrant abdominal ultrasound showed no gallstones or other abnormalities within the pancreatobiliary system. CT abdomen and chest with and without contrast showed evidence of acute pancreatitis and no other abnormalities. He was managed with intravenous fluids, pain management, and DVT prophylaxis and transitioned to a full liquid diet on hospital day four with lipase at 37U/L. He was discharged on hospital day five with full resolution of pancreatitis and COVID symptoms.

Conclusion There is a limited but growing amount of literature supporting the diagnosis of SARS-CoV-2 induced viral pancreatitis. We worked up common causes of pancreatitis,
and we do believe the patient presented with SARS-CoV-2 induced pancreatitis. About 1–2% of non-severe and 17% of severe cases of COVID have exhibited pancreatic injury. Angiotensin-converting enzyme 2 (ACE2) is the main target receptor of SARS-CoV-2. ACE2 is most abundantly expressed in the pulmonary system, but is also expressed in pancreatic cells as well as other cells in the gastrointestinal tract. This could explain a correlation between the virus and pancreatitis and other gastrointestinal symptoms. Although there is growing evidence of COVID-induced pancreatitis, the causal relationship is still debated between the two presentations.

Neonatal case reports

12:00 PM

Thursday, February 10, 2022

#19 DEFYING THE DEFINITION OF PERINATAL LETHALITY FOR ACHONDROGENESIS TYPE II
L Weaver*, AF Kane. The University of Alabama at Birmingham, Birmingham, AL
10.1136/jim-2022-SRMC.19

Case Report Achondrogenesis Type II is an autosomal dominant lethal collagen disorder characterized by prominent forehead, recessed chin, small chest and ribs with resulting lung hypoplasia, enlarged abdomen, shortened limbs, and decreased ossification of the pelvis and spine due to pathologic variants of the COL2A1 gene. The gene encodes for the pro-alpha1 chain, a key component of type II collagen which is necessary in developing the framework for embryologic skeletal development. The phenotype of achondrogenesis is variable, and that variation remains poorly understood.

Case presentation Infant and mother presented after a detailed sonographic exam showed micromelia and polyhydramnios concerning for skeletal dysplasia. An amniocentesis was performed at 22 weeks gestation age (wga) was notable for a heterozygous missense mutation on the COL2A1 gene concerning for a collagenopathy. The infant was born at 31.4wga due to premature amniotic rupture. Upon delivery infant was noted to have high palate, protuberant abdomen, rhizomelic shortening of all extremities, sacral dysgenesis, and small thoracic cavity. He required intubation and mechanical ventilation immediately following delivery due to respiratory failure. He has failed multiple attempts at extubation and has remained ventilator dependent since birth. He was initially considered to have a perinatally lethal disease phenotype due to upper airway obstruction and severe lung hypoplasia, however, after 6 months he may be considered as a tracheostomy candidate due to improved amount of lung tissue and continued survival.

Discussion The clinical and radiographic phenotype of achondrogenesis are widely varied and may place a significant burden on a family as the definition of perinatal lethality remains challenging. The definition of lethality could be altered as a phenotype progresses with age. The number of skeletal dysplasias is growing rapidly due to technological advancements in genetic testing. A detailed description of this patient in the medical literature will aid the ongoing differentiation of the collagenopathy types. Skeletal dysplasias may be inherited via autosomal dominant, autosomal recessive, X-linked dominant, X-linked recessive, and Y-linked fashions. Mutation can occur de novo or inherited. Early prenatal diagnosis helps to guide genetic and palliative discussions with families to determine postnatal treatment options and recurrence risk.

#20 CONGENITAL DISLOCATION OF SPINE IN A NEONATE: A CASE REPORT
AS Surti*, K Dolma. University of South Alabama, Mobile, AL
10.1136/jim-2022-SRMC.20

Introduction Congenital dislocation of the spine (CDS) is a rare spinal malformation due to defective embryogenesis of the spine and spinal cord at a single level, that results in abrupt angulation of the spinal cord. We report a rare case of congenital displacement of the spine in a neonate which was missed at first admission.

Case Report An 8-day old Ex-37-week old female infant was admitted to our neonatal intensive care unit due to concerns about a bump in the back. The infant was born to a 30-year-old female via spontaneous vaginal delivery at an outside hospital. The prenatal course was unremarkable, all prenatal ultrasounds were normal, and the mother was not on any medications during pregnancy except prenatal vitamins. Delivery was uncomplicated – total duration of labor was 8 hrs, APGAR assigned were 8/10 and 9/10 at 1-minute and 5-minutes respectively. She was discharged from the delivery hospital after routine care. On follow-up exam with the primary care pediatrician, she was found to have a lump on the lower back. Spinal imaging including ultrasonography and magnetic resonance imaging were done which revealed posterior dislocation of L3 vertebral body relative to L2 with spinal cord compression. She was admitted to the neonatal intensive care unit after neurosurgery consultation. On physical exam,
the infant was noted to have bilateral talipes valgus deformity with an otherwise unremarkable neurological exam. On spinal exam, she had midline bony swelling (step-up defect) at L3 level with no other neurocutaneous findings. Further workup did not show any evidence of VACTERL. Chromosomal microarray and whole-exome sequencing were normal. The infant’s spine was stabilized with custom-built thoracic lumbar sacral orthosis with the eventual plan to attain surgical intervention when infant attains 10 kg.  

**Conclusion** Although rare, congenital dislocation of the spine when diagnosed needs an immediate stabilization of the spine. Our case stresses the importance of a thorough spinal examination for appropriate diagnosis.

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**Abstracts**

**A SLIPPERY SLOPE – INCIDENTAL DETECTION OF HHV6 IN MENINGITIS/ENCEPHALITIS PANEL – TO TREAT OR NOT TO TREAT?**

M Lakhmi Narasimhan⁷, A Khatbar, S Bhaskaran, S Parat. Texas Tech University Health Sciences Center, Amarillo, TX

**Introduction** Human herpesvirus-6 (HHV-6) is a beta herpesvirus found ubiquitously. Bio Fire’s Filmarray meningitis/encephalitis panel (FDA approved test of 14 bacteria, fungi and viruses commonly found in encephalitis) is used in many laboratories for diagnosis of central nervous system infections and HHV-6 is found to be frequently positive. However, establishing HHV-6 as a cause of meningitis or encephalitis may be challenging as a polymerase chain reaction (PCR) test alone does not imply causality.

**Case Description** A female neonate was born at 34+5 weeks gestation to a 21-year-old with active genital HSV lesions which was positive for HSV-2. Examination revealed a clinically stable neonate. Workup per Redbook guidelines showed negative HSV surface culture and blood PCR. The Biofire meningitis panel was negative for HSV-DNA-PCR, however, was positive for HHV-6 virus. HHV-6 blood PCR on the neonate was also positive. There was no CSF pleocytosis. Both mother and neonate had a negative HHV-6 IgM antibody and a positive HHV-6 IgG antibody, indicating possible vertical transmission and latent infection. After consult with infectious disease specialist, baby received IV Ganciclovir and repeat Biofire meningitis panel at 7 days continued to remain positive for HHV-6. A decision was made to continue IV Ganciclovir for total of 21 days. WBC counts were serially monitored, and on day 10 of therapy, she developed significant neutropenia (800 cells/mm³). As the positive HHV-6 was a serendipitous finding and the literature review showed possibility of lifelong latent infection the decision was made to discontinue Ganciclovir. Neonate was closely monitored as she was in the NICU with feeding issues and her counts recovered. Baby remained asymptomatic and had an uneventful hospital course.

**Discussion** A unique feature of HHV-6 is establishment of lifelong latency by integration into human chromosomes. If such integration occurs in a germ cell, it can be vertically transmitted to the fetus through chromosomal integration (ciHHV-6). With the advent of newer diagnostic tests like Biofire meningitis panel, there has been an increasing rate of detection of HHV-6 virus, but majority are not associated with encephalitis. A positive test may either be due to chromosomal integration or subclinical reactivation of latent virus. A viral load or qPCR test on whole blood can easily determine ciHHV-6 status in almost all cases. One should be vigilant when initiating antiviral agents and decision to treat should be based on the patient’s clinical condition, immune status, and laboratory results to avoid serious adverse effects from antiviral agents.

**Conclusion** Physicians caring for patients who test positive for HHV-6 on the Biofire panel should approach therapeutic decision making using all available information to minimize significant morbidity due to unnecessary use of antiviral agents, and emotional and financial burden associated with unwanted hospital stay.

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**Case Report** Disseminated Herpes Simplex Virus (HSV) is a feared neonatal infection typically presenting after the first week of life with sepsis-like features and encephalopathy. Congenitally acquired HSV infection represents a rare, serious variety of HSV in the neonatal period, providing a unique diagnostic challenge with significant morbidity and mortality.

A female infant was delivered at 29.2 weeks gestational age via cesarean section in the setting of non-reassuring fetal heart tracings, maternal preeclampsia, gestational diabetes, and Sars-COV2 infection. Physical exam at 1 hour of life demonstrated erosive lesions of the knee, foot, and cheek. Dermatology was consulted and favored infectious source of lesions, so a sepsis evaluation including HSV, VZV, and CMV studies was performed and ampicillin, gentamicin, acyclovir, and amphotericin B were started. Given high concern for HSV vs. varicella, ophthalmology was consulted, finding bilateral, likely viral, retinitis. Laboratory evaluation revealed transaminitis, thrombocytopenia, and CSF pleocytosis with elevated protein. HSV PCR was positive in blood, CSF, and cutaneous lesion, as well as HSV2 positive on surface culture, yielding the diagnosis of congenital disseminated HSV with meningoencephalitis. The remainder of infectious studies were negative. There was no known maternal HSV history, although placental pathology revealed positive immunohistochemical staining for HSV 1/2 in addition to Sars-COV2. Patient’s serial CSF and blood HSV remained positive despite treatment with acyclovir. Serial HSV showed initially normal findings that progressively worsened to feature bitemporal dysesthesia with sustained myoclonic jerks in the absence of electrographic correlate on EEG. Levetiracetam and phenobarbital alleviated jerks, although she developed progressive hypotonia as neurologic status continued to deteriorate. Considering persistently positive HSV studies, foscarinet was added to acyclovir. However, at 3 weeks of life, she was intubated for acute respiratory failure, and given clinical trajectory and devastating prognosis, mother asked to compassionately withdraw support and allow natural death on day of life 25.
This case of congenital, disseminated HSV is particularly unique in that it occurred in a premature infant of 29 weeks gestation and had significantly elevated copy numbers in the blood and CSF as well as skin lesions, indicating likely long-standing infection at the time of delivery. Additionally, it is unknown how concurrent placent al viral infections with SARS-CoV2 may have contributed to this patient’s course, or if the recent maternal SARS-CoV2 infection may triggered HSV reactivation and subsequent congenital HSV.

**Abstracts**

**#23** **TRANSIENT MYELOPROLIFERATIVE DISORDER IN TRISOMY 21 COMPLICATED BY TUMOR LYsis SYNDROME AND MULTI-ORGAN FAILURE**


10.1136/jim-2022-SRMC.23

Background Transient myeloproliferative disorder (TMD) is diagnosed in 10–30% of newborns and young infants with Trisomy 21. This disorder often results from a GATA1 mutation, causing uncontrolled proliferation of blast cells, with spontaneous regression in most cases. Complications include thrombocytopenia, hepatosplenomegaly, pericardial and pleural effusions, and rarely tumor lysis syndrome (TLS). Case We present the case of a late pre-term male infant, who at delivery had phenotypic features consistent with Trisomy 21, hepatosplenomegaly, and respiratory distress, prompting transfer to our facility. Laboratory examination showed hyperleukocytosis with a leukocyte count >440,000 (10^9/L) and 97% blasts, hyperkalemia, hyperuricemia, and disseminated intravascular coagulation (DIC). Echocardiography revealed an atrial septal defect and pulmonary hypertension. The patient received supportive care with mechanical ventilation, intravenous hydration, Allopurinol, Rasburicase, packed red blood cells, cryoprecipitate, and fresh frozen plasma. A double volume exchange transfusion was also performed. Despite aggressive management, he remained hypotensive with metabolic acidosis, hyperkalemia, and multi-organ failure succumbing to his disease, on day 2 of life, prior to chemotherapy. Discussion We describe the case of a newborn with Trisomy 21 and TMD that developed TLS and multiorgan failure prior to chemotherapy. Most patients with TMD do not need cytotoxic drugs, as the process spontaneously resolves. However, symptomatic babies with high blast counts and organ dysfunction benefit from early interventions, including exchange transfusion and cytotoxic agents. TLS is a complication of TMD which usually results from the rapid degradation of malignant cells after initiation of chemotherapy. Our case indicates that TLS can occur before the initiation of chemotherapy and can be fatal.

**#24** **UNUSUAL CAUSE OF RESPIRATORY DISTRESS IN A TERM NEWBORN**

A Mirza*, S Kilaikode, N Walyat. LSU Health Shreveport, Shreveport, LA

10.1136/jim-2022-SRMC.24

Introduction Respiratory distress is a common clinical presentation seen in neonates. Common causes of respiratory distress in term neonates include, but are not limited to, transient tachypnea of newborn, infections, aspiration, or cardiac etiologies. We present the rare case of a term infant who presented with an unusual cause of respiratory distress in newborn.

Case Report Our patient was born at an outside facility to a 27-year-old female who had poor prenatal care. Infant was delivered at 37 weeks gestation via emergent C-section due to non-reassuring fetal heart rates. On delivery, his APGARS were 8 and 9 at 1 and 5 minutes. He was noted to have an obvious chest wall deformity with a concavity to the right anterior chest and slight lateral curvature of thoracic vertebrae. He was unable to maintain saturations on room air and had persistent tachypnea so was placed on supplemental oxygen and transferred to NICU. Chest X-ray obtained at birth revealed multiple mid upper thoracic developmental vertebral body anomalies, diminished left thoracic volume and multiple bilateral rib fusion abnormalities. Blood work obtained was unremarkable with no concern for sepsis, metabolic conditions, or hematological issues. He failed multiple attempts to wean off oxygen and would drop his saturations mostly when feeding. He was therefore transferred to our facility for higher level of care at two weeks of life. On arrival to our NICU, Pulmonology was consulted, and further workup was obtained per their recommendations including a CT Chest which showed the known thoracic abnormality but no parenchymal or intrapulmonary processes. Modified Barium Swallow Study was negative for aspiration. Echocardiogram showed a Patent Foramen Ovale but was otherwise normal. Cranial Ultrasound was normal and Abdominal Ultrasound showed a right pelvic kidney. Genetics was consulted, and genetic tests were obtained including chromosomal microarray which was normal and the working diagnosis was possible variant of Skeletal Dysplasia. Since all other causes of respiratory distress were ruled out, his continual oxygen requirement was attributed to restrictive lung disease secondary to congenital chest wall deformity. He was unable to be weaned to room air and continued to be tachypnic on nasal cannula. Since non-invasive ventilation (BiPAP/CPAP) is not practical in this age group, decision was made to discharge home on high flow nasal cannula. He was eventually weaned off oxygen and at his last follow up at 9 months of age, he had been doing well on room air. He was referred to Pediatric Orthopedics and is scheduled for Expansion Thoracoplasty when he turns 1 year old.

Conclusion Restrictive Lung Disease secondary to chest wall deformities can be a cause of respiratory distress in newborns. High flow nasal cannula is a newer means of home oxygen delivery and its use in this population is still evolving.

**#25** **A RARE CASE OF HYBRID ELS/CPAM WITHOUT A SYSTEMIC ARTERIAL SUPPLY**

Y Cao*, B Weidner. University of Florida, Pensacola, FL; Ascension Florida, Pensacola, FL

10.1136/jim-2022-SRMC.25

Case Report A newborn female was delivered via elective C-section at 34 weeks due to maternal preeclampsia, growth restriction and a suspected right lung mass. Two doses of prenatal steroids were given to mother prior to delivery. The chest mass was noticed on a prenatal ultrasound which was followed by a fetal MRI. However, the MRI did not reveal an abnormal chest mass but it was somewhat limited by motion of the fetus.
Case Report A male infant was born at 28 weeks gestation to a G2P2 mother due to non-reassuring fetal status. Pregnancy was complicated by intractable seizures requiring induced coma, suspected chorioamnionitis, and insulin-dependent diabetes mellitus. Mother had epilepsy requiring multiple anti-epileptics. At delivery, the baby was limp, edematous, and apneic requiring mechanical ventilation. He received surfactant for respiratory distress syndrome, dopamine for hypotension and antibiotics for presumed sepsis. On the third day of life, he was noted to have a systolic ejection murmur with widened pulse pressures. Echocardiogram showed multiple non-obstructive echogenic masses scattered over the myocardium of the ventricles, septum, and papillary muscles suggestive of rhabdomyomas. Due to maternal epilepsy and suspected cardiac rhabdomyomas, the diagnosis of familial tuberous sclerosis complex (TSC) was considered. Neither mother nor infant had cutaneous findings. Mother had unremarkable head imaging. His cranial ultrasound showed nodular intraparenchymal echogenicity in bilateral subcortical frontal lobes suspicious for subcortical tubers and left lateral ventricle prominence with ependymal nodularity suspicious for a subependymal hamartoma. Renal ultrasound and ophthalmologic exam were unremarkable.

TSC is a genetic disorder featuring the growth of benign tumors in multiple organ systems. Most cases are caused by mutations in either TSC1 or TSC2. Disease severity is variable and specific physical manifestations appear at progressive ages. Often, mutations in TSC2 are associated with a more severe clinical course and developmental delay. Cardiac rhabdomyomas may lead to arrhythmias or outflow obstruction. Seizures typically present in infancy and can be difficult to control. A clinical diagnosis is made when 2 major and 1 minor criteria or 1 major and 2 minor criteria are fulfilled. Major criteria include hypomelocytic macules, angiofibromas, ungual fibromas, shagreen patch, retinal hamartomas, cortical tubers, subependymal nodules, subependymal giant cell astrocytoma, cardiac rhabdomyomas, lymphangiomyomatosis or angiomyolipomas. Minor criteria include confetti skin lesions, dental enamel pits, intraoral fibromas, retinal achromatic patch, multiple renal cysts, nonrenal hamartomas and scoliotic bone lesions.

Genetic testing revealed normal maternal TSC1 and TSC2, however the infant's testing was abnormal and revealed a variant of unknown significance (VUS) in TSC2. If paternal testing is negative for TSC changes, the infant's VUS can be considered a de novo pathogenic mutation. At near-term, the infant's brain MRI demonstrated multiple subependymal nodules and subcortical tubers. The baby was diagnosed with TSC given his clinical findings. He was discharged at term without cutaneous findings or evidence of seizures. He will be followed by cardiology, genetics, ophthalmology, and the premature developmental follow-up clinic.

PRETERM INFANT WITH TUBEROUS SCLEROSIS COMPLEX

ME Franco Fuenmayor*, A Williams, AM Aly, S Jain, M Huff. The University of Texas Medical Branch at Galveston, Galveston, TX

10.1136/jim-2022-SRMC.26

CONGENITAL ECTROPION OF BILATERAL UPPER EYELIDS IN A NEWBORN

M Lakshmi Narasimhan*, S Parat, S Henrick, M Naqvi. Texas Tech University, Amarillo, TX

10.1136/jim-2022-SRMC.27

Introduction Congenital ectropion is an eversion of eyelid, where the skin of the lid is folded on itself, and conjunctival surface is exposed externally. The incidence is higher in black
infants, Trisomy 21 syndrome, and in infants born with colloid skin disease.

**Case Description** An early term female newborn was born to a 25 year old G3P2 mother of African ethnicity by vaginal delivery. Mother had adequate prenatal care with negative infectious prenatal labs. Mother had spontaneous rupture of membranes lasting for 14 hours and a healthy-looking female baby was delivered without any complications. Examination revealed a normal baby not in any obvious distress, but on eye exam, an erythematous and edematous upper palpebral conjunctiva with mild eversion of bilateral upper eyelids were noted on crying (Grade II as per Pico’s classification). The underlying pupils or sclerae could not be visualized, and red reflex could not be performed. The eyeballs were palpated in the socket. Edematous upper palpebral conjunctiva was separated using eyelid retractors and underlying pupils and conjunctivae were noted to be normal in appearance. Condition was diagnosed as bilateral congenital ectropion with severe chemoosis. Hypertonic saline compresses over the eyelids were given for edema. On day of life 4, there was complete resolution of ectropion and normally appearing pupils and conjunctivae were noted.

**Discussion** Congenital ectropion is rarely reported in literature. Venous stasis, birth trauma and various abnormalities of muscles and ligaments of orbit including hypotonia of orbicularis muscle, vertical shortening of anterior lamella or vertical elongation of posterior lamella, failure of fusion of orbital septum with levator aponeurosis have all been proposed as possible mechanisms of congenital eversion. Initially, eversion occurs only when the infant squeezes the eyelids shut during crying and resolve when the infant is calm. As edema increases, the eversion persists and may be difficult to reposi-
tion. The chemosed conjunctiva protects the underlying cornea and therefore, corneal complications are uncommon. Management strategies include both conservative and surgical approaches. Conservative management includes 5% hypertonic saline and lubricants which prevents desiccation of exposed conjunctiva and decreases edema allowing for spontaneous inversion of eyelids. Surgical treatment includes tarsorrhaphy, fornix sutures and full thickness skin grafts to the upper eye lid. The condition resolves without any sequelae with prompt management, but delay in treatment can lead to complications including ambylopaia, corneal ulcers, and permanent blindness. 

**Conclusion** Congenital eyelid eversion is a rare condition. A favorable clinical outcome may be expected with prompt diagnosis and intervention of this condition. Knowledge of this condition with early intervention by clinicians may help in the prevention of complications that arise from poorly treated cases.

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**#28 JUVENILE MYELOMONOCYTIC LEUKEMIA ASSOCIATED WITH NOONAN SYNDROME**

A Gurung*, R Ramakrishnan, K Dolma, P Maertens, P Mari, BM Vamesu. University of South Alabama Health System, Mobile, AL

**Introduction** Juvenile Myelomonocytic Leukemia (JMML) is an aggressive myeloproliferative disorder associated with RASopathies due to selective mutations in RAS, NF1, PTPN11, and CBL. Patients with Noonan syndrome (NS) with germ-line PTPN11 mutations have an increased risk of developing JMML or JMML-like myeloproliferative disorder. JMML associated with NS is less aggressive and transient compared to isolated JMML caused by somatic mutation in PTPN11. We are reporting the case of a newborn female with NS and JMML.

**Case summary** At 35 6/7 weeks of gestation, a female infant was born to a 35-year-old G6P2124 via spontaneous vaginal delivery. Cystic hygroma was noted on the fetal ultrasound at 14 weeks. On physical exam at birth, she had pterygium colli and facial dysmorphism (hypertelorism, downslanting palpebral fissures, posteriorly rotated low set ears). She was admitted to the neonatal intensive care unit (NICU) due to respiratory distress. The patient was initially started on Ampicillin and Gentamicin for suspected sepsis. Initial CBC revealed WBC 36,000/µL with 21% monocytes and platelet count 46,000/µL. She had seizure-like activity on day two of life. CSF analysis showed WBC 138 cells/µL with 91% monocytes, RBC 1000 cells/µL, protein 95 mg/dl, and glucose 63 mg/dl. Gentamicin was discontinued and a total of 14-day course with Ampicillin and Ceftazidime was completed. Blood and CSF cultures were negative. EEG showed no seizure activity. Cranial ultrasound revealed hypoplastic corpus callosum, paucity of gyri, mild colpocephaly, cerebel-
lar vermis hypoplasia, and wide extra-axial space. ASD (3 mm) and perimembranous VSD (3 mm) were found on echocardiogram. RASopathy panel identified a pathogenic variant c.211T>C (p.Phe71Leu) in PTPN11 that confirmed the diagnosis of NS.

The infant had persistent leukocytosis (40–60x103/µL) with monocytosis and thrombocytopenia. She also had splenomegaly. Flow cytometry revealed 3% myeloblasts and 23% monocytes with mild monocyte abnormalities. She was diagnosed with JMML and the treatment with 6-mercaptopurine (6-MP) was initiated. WBC count decreased and thrombocytopenia resolved after starting the treatment with 6-MP.

**Conclusion** JMML should be suspected in any patient with NS who has persistent leukocytosis with monocytosis and thrombocytopenia without evidence of an infectious process. Even though JMML associated with NS is transient, we decided to treat this patient with 6-MP due to hyperleukocytosis.

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**Pediatric clinical symposium**

12:00 PM

**Thursday, February 10, 2022**

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**#29 A RARE PRESENTATION OF PERITONEAL CHLAMYDIAL INFECTION MIMICKING PERITONEAL CARCINOMATOSIS**

1’S Murue*, 2AI Kamil, 1E Whittingham. 1University of Florida, Pensacola, FL; 2Phoenix Children’s Hospital, Phoenix, AZ

**Case Report** A 17-year-old sexually active female, presented with diffuse abdominal pain and distension. The symptoms were waxing and waning for a year. She denied recent travel. Family history of a breast cancerer was reported.

On examination: Patient was vitally stable but appeared uncomfortable. Abdomen was markedly distended, dull to percus-
sion with positive fluid thrill but bowel sounds were
appreciable. Pelvic exam was negative for cervical tenderness or discharge. Labs: CRP 5.36 mg/dL, serum albumin 2.9 g/dL, CA125 198.4 U/L. Liver enzymes, LDH and uric acid were normal. CBC unremarkable. CT scan abdomen-pelvis showed severe ascites with mesenteric omental caking. Peritoneal fluid showed SAAG <1.1, WBC 950, 53% lymphocytes, LDH 186 U/L, protein 6.4 g/dL.

Working diagnosis was peritoneal carcinomatosis vs tuberculous peritonitis. TB workup was negative. Laparoscopy showed pelvic inflammation around the uterus with abscess and benign lymph nodes.

STIs as possible cause of patient’s ascites were investigated. Hep-B and Chlamydia, gonorrhea workup was negative. Endocervical NAAT was positive for Chlamydia. Pelvic inflammatory disease (PID) was presumed as the cause of ascites. Patient was started on intravenous antibiotics. Symptoms resolved and the patient was discharged on Doxycycline and Metronidazole.

Discussion Chlamydia Trachomatis (CT) is the most commonly reported STI in the US, with nearly 1.8 million cases reported in 2018. Although the majority of females with CT infection are asymptomatic, CT known to cause urethritis, salpingitis, and cervicitis. 10 -15% of untreated women may develop PID. Ascites was rarely reported as the only presenting symptom of CT. Diagnosis of CT infection is commonly made by NAAT which is the most sensitive test. Exudative ascitic fluid and predominance of lymphocytes were noted in all reported CT cases with ascites. Hospitalization with parenteral antibiotic for 1–2 days is recommended for severe PID. Clindamycin or metronidazole should be used when tubo-ovarian abscess present.

Conclusion Despite the paucity of reported cases with ascites as a presenting symptom of CT infection, CT & other STIs should be in the DDx for sexually active adolescent with abdominal pain and ascites. Appropriate testing should be pursued early in the workup of these patients.

**Abstract #29 Figure 1 CT abdomen-pelvis: White arrow pointing towards fluid collection in the abdominal cavity**

**Abstract #30 TRANSVERSE MYELITIS IN A PEDIATRIC PATIENT WITH COVID-19**

A Jagadish*, M Benjamin, P Pichlingue Reto. LSU Health Shreveport, Shreveport, LA

10.1136/jim-2022-SRMC.30

Case Report Transverse myelitis is the segmental inflammation of the spinal cord with motor and sensory abnormalities at and below the level of the lesion. Often, the etiology is unknown but may be attributed to autoimmune conditions or viruses. Here we describe a rare case of transverse myelitis secondary to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)/coronavirus disease (COVID-19).

Case A 5-year-old male with a history of asthma presented for vomiting and altered mental status. The patient was noted to be altered, lethargic, and in respiratory distress. Intubation was performed. After family collateral was obtained, it was revealed that patient possibly ingested Sertraline and/or Risperidone at an unknown time prior to arrival. History also revealed that he had slurred speech, ataxia, and a fall with trauma to forehead 1 day prior to arrival. He tested positive for COVID-19 via PCR and chest x-ray revealed RLL consolidation. Dexamethasone was started.

When sedation was weaned in hopes of extubation, patient was noted to be alert, but not moving extremities and had minimal gag and cough reflex. MRI of Brain and Spine were conducted and revealed findings suggestive of long segment transverse myelitis involving C2 to C3. LP was performed with unremarkable CSF studies and IV Solumedrol was started. In light of active COVID-19 infection, and worsening respiratory status, patient started on 5 days Remdesivir. Further, patient underwent ten sessions of plasmapheresis. Repeat MRI was consistent with previous. Physical and occupational therapy initiated at the onset of illness in hopes of achieving musculoskeletal improvement.

Patient had some minimal musculoskeletal improvement, however, given his condition, decision was made for patient to undergo placement of gastrostomy and tracheostomy tubes. Patient was weaned off of sedatives and withdrawal was treated with a clonidine taper. Once stabilized, patient was transferred to neurological inpatient rehabilitation center.

Discussion Neurological manifestations in children affected by SARS-CoV-2 are relatively common but are often non-specific. Worldwide data reports only 1% of children with COVID-19 present with severe symptoms of encephalopathy, seizures, and meningeal signs. Pathophysiology is multifactorial, including direct invasion of the CNS, vascular insufficiency, immune dysregulation and autoimmunity. Imaging is paramount in the diagnosis of transverse myelitis. Treatments are emerging and may include steroids, immunoglobulin, plasmapheresis, and monoclonal antibodies.

Conclusion Much is unknown about COVID-19. Information is emerging and evolving daily. Cases of transverse myelitis in COVID-19 have been reported in few adult patients and minimal pediatric patients. Practitioners should keep transverse myelitis on their list of differentials for neurological complications of SARS-CoV-2 infections and initiate aggressive treatment with a multidisciplinary approach.
excessive tearing, discharge, floaters, vomiting, fever or headaches. Her family history was unknown as patient was an adopted child. Her initial external ocular, including intraocular pressure, and remainder of the neurologic exams were normal. A few hours later, the patient’s vision loss gradually regressed to an inferonasal defect. Retinal edema along the superotemporal arcade on the right was noted during a dilated fundoscopic examination by Ophthalmology, concerning for branched retinal artery occlusion (BRAO). MRU/MRA of the brain, carotid duplex ultrasound, lipid panel, bartonella and toxoplasmosis titers, coagulation profile, ANA, and a hemoglobin A1C were normal. Transthoracic echocardiogram showed trivial tricuspid and mitral valves insufficiency, but was otherwise normal with an intact interventricular septum, no atrial septal defect, and no thrombus. She was discharged home on daily Aspirin with close outpatient follow-up with Ophthalmology and Neurology.

The incidence of central retinal artery occlusion (CRAO) is rare, with about 1 to 10 in 100,000; symptomatic BRAO is even less common. The average age of patients is usually between 60–65 years, with more than 90% of patients over the age of 40, making this condition especially uncommon in children and adolescents. The central retinal artery is a branch of the ophthalmic artery, which itself is a branch of the internal carotid artery. It enters the eye at the optic disc and divides into smaller branches to supply the inner layers of the retina. An occlusion of the central artery or any of its branches leading to retinal ischemia is defined by sudden painless monocular vision loss. Men are more commonly affected than women. Potential etiologies include carotid artery atherosclerosis, cardiogenic embolism, vascular disease, hematologic disease such as hypercoagulable state, inflammatory disease such as giant cell arteritis and polyarteritis nodosa, and infection. Although carotid artery atherosclerotic disease is the most common cause overall, it is unusual under the age of 40, when cardiogenic embolism is the most common cause. Patients with BRAO typically complain of monocular visual loss, which may be restricted to just part of the visual field. Diagnostic work-up focuses on identifying the underlying etiology. It includes carotid artery imaging, cardiac evaluation, and hypercoagulable testing. About 80% of patients recover their normal vision, and therefore acute treatments are generally not offered. In the case of our patient, her BRAO remains of unknown etiology as all of her inpatient work-up yielded normal results. Further testing is currently ongoing.

### A MODERN CONUNDRUM: CHICKENPOX IN A VACCINATED CHILD


10.1136/jim-2022-SRMC.32

#### Case Report

Chickenpox is a highly contagious viral infection due to the varicella zoster virus. Primary infection in young children typically presents as a cutaneous, self-limited disease. Older patients and immunocompromised individuals are at higher risk for severe sequelae including superimposed bacterial infections, pneumonia, hepatitis, meningitis, encephalitis, hepatitis, and Reye’s Syndrome. Prior to the introduction of the varicella vaccine in 1995, roughly 4 million people contracted chickenpox each year. The vaccine led to a reduction in rates of infection, hospitalizations, and mortality. Today, fewer than 350,000 people contract chickenpox yearly. However, breakthrough infections in vaccinated individuals still occurs in approximately 13 per 100,000 individuals. Below, we discuss the case of a vaccinated 9 year old female with a superimposed bacterial infection secondary to chickenpox.

A fully vaccinated 9 year old female was transferred from an outside hospital for worsening cellulitis of her right upper extremity. Two weeks prior to admission she was treated with 10 days of oral clindamycin for cellulitis of her face, chest, and right arm with clinical improvement. Four days after resolution of the cellulitis she developed a new pruritic papule on her right arm. Her sister had several similar lesions which resolved within 48 hours. Our patient developed progressive erythema of her right antecubital fossa with evolution to a large, serum crusted plaque. Pruritic vesicles developed on her face, abdomen, and legs. She was transferred to our hospital for worsening cellulitis and started on intravenous vancomycin while wound cultures were pending. Though she experienced moderate improvement in the right arm plaque after several days of vancomycin, she developed progressive vesicles, facial swelling, eye pain, and severe pruritus. Varicella infection was confirmed by direct fluorescence antibody testing. The bacterial culture grew methicillin sensitive *Staphylococcus aureus*. She was discharged home with oral acyclovir and cephalexin.

Despite previous varicella vaccination, our patient developed disseminated infection consistent with chickenpox, which was complicated by a superimposed bacterial infection. Due to the high efficacy of the varicella vaccine, many clinicians lack firsthand experience with varicella infections and are unfamiliar with the natural progression of the virus. Prompt recognition of varicella infection is necessary to prevent and manage significant complications and to ensure appropriate isolation precautions both inpatient and outpatient settings. Despite reduced rates of this infection, the varicella virus remains a significant pathogen in both the unvaccinated and the immunocompromised populations. This case highlights the importance of familiarity with both typical and atypical presentations of varicella, as well as the importance of maintaining a high index of suspicion for varicella even in the vaccinated patient.

### A RARE CASE OF ADENOID CYSTIC CARCINOMA OF THE SOFT PALATE IN AN ADOLESCENT FEMALE PRESENTING AS CHRONIC PHYARYNGITIS


10.1136/jim-2022-SRMC.33

#### Case Report

Adenoid cystic carcinoma is a rare malignant tumor of the secretory glands, most often affecting the salivary glands. It is known for taking a prolonged course with late local recurrences, distant metastases, and poor response to systemic chemotherapy. This case report highlights this rare malignancy’s presentation masquerading as a common pediatric complaint and our experience with the diagnosis, treatment and management of an adolescent patient.

#### Methods and Used

A case review of the presentation and the multi-disciplinary management of an adolescent female patient with adenoid cystic carcinoma of the soft palate.
Summary of Results A 17-year-old female presented to Otolaryngology for evaluation of chronic pharyngitis. She endorsed a year-long history of recurring sore throat and a growing lump on the roof of her mouth. On physical exam, a 1 cm submucosal lesion on the soft palate was noted. Surgical excision revealed adenoid cystic carcinoma with perineural invasion and positive margins. She was referred to Hematology/Oncology for concurrent management. Imaging revealed localized disease. Due to increased risk of recurrence with positive margins, the patient subsequently underwent a repeat excision with negative margins. She was then treated with 60 Gy of adjuvant radiotherapy over 6 weeks with minor complications. She remains without local recurrence 6 months after presentation.

Conclusions Chronic pharyngitis is an uncommon pediatric complaint and should prompt concern for malignancy. Salivary gland tumors account for 0.5% of pediatric malignancies but are the most common pediatric malignancy exclusive to the head and neck. The incidence of head and neck cancer amongst the pediatric population has risen, warranting greater awareness of these cancers amongst general pediatricians and more treatment standardization.

As a rare tumor, studies of optimal treatment for adenoid cystic carcinoma have been limited and there is no agreed upon set of prognostic factors to predict recurrence. Up-front treatment with surgery and radiotherapy has remained the standard of care for decades, as no effective systemic chemotherapy has been identified. Complete tumor excision must be balanced with the risk of functional deficits and the consequent morbidity of dysfunction in speech, swallowing or nerve injury. In children undergoing radiation therapy, late effects may occur at a much earlier age and cause lifelong morbidity.

This patient has a predicted 5-year event-free survival of 75% with a 10–20% chance she will remain disease-free at 15 years. Recurrence can be locoregional but often presents as distant metastases to the lung or liver. The lack of effective systemic treatments during recurrence presents a dim prospect for a pediatric patient looking towards young adulthood. Further research is needed to determine optimal treatment, including targeted therapy, in pediatric patients to improve long-term event-free survival.

FIBROSING MEDIASTINITIS SECONDARY TO HISTOPLASMOSIS: A UNIQUE PRESENTATION IN AN ADOLESCENT

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Case Report A 15-year-old female presented to our hospital with cough, weight loss, and a mediastinal mass. She initially developed a cough after moving from Oklahoma to Florida in 2020. In January 2021, she sought medical care for vomiting, vaginal bleeding, and a persistent cough. She was found to have a miscarriage, and her cough was not addressed. A month later, she sought medical evaluation due to persistent cough and new onset chest pain, and was diagnosed with an upper respiratory infection. Her symptoms failed to improve so she presented to the ER. X-rays of the chest and abdomen were negative. Her labs were significant for an elevated d-dimer and a microcytic anemia. A chest CT was done to rule out pulmonary embolism and revealed right hilar and subcarinal adenopathy, and a right middle lobe pulmonary nodule. She underwent a VATS procedure and debulking. On further testing, her histoplasma antibody was positive. She was treated with a 14-day course of Amphotericin B with plans for a 12-month course of itraconazole. Over the next month she developed worsening cough, vomiting, dysphagia, and a 10 kg weight loss. She was subsequently readmitted and repeat chest CT showed an infiltrative mediastinal and right hilar mass that had increased in size, with the pulmonary nodule in her right middle lobe now causing mass effect on the pulmonary artery and left atrium. She was given a steroid burst with a steroid taper prior to transfer to our hospital for higher level of care. Pediatric infectious disease, pulmonology, rheumatology, and hematology/oncology were all consulted. Differential diagnosis included: lymphoma, histoplasmosis, sarcoidosis. Right thoracotomy with mass biopsy was performed by pediatric cardiothoracic surgery. Pathology was consistent with fibrosing mediastinitis, likely secondary to histoplasmosis. She was continued on oral steroids and itraconazole. She was discharged home with repeat imaging and follow up arranged. At most recent follow up her mass has decreased in size, though she continues to deal with a chronic cough and has some nighttime sweats. She has minimal limitations in physical activity. Currently, her specialists are debating initiation of Rituximab as the next best step in her treatment.

Fibrosing mediastinitis is a rare condition of fibrosing on the mediastinum from an abnormal immune reaction. This condition is typically seen in adult patients. Histoplasmosis, tuberculosis, sarcoidosis, other autoimmune disorders, and mediastinal radiation are all known causes of fibrosing mediastinitis, though many cases are idiopathic. Symptomatic therapies include vascular stents, airway dilation, esophageal stenting, and surgery. Targeted therapies include antifungals, glucocorticoids, and rituximab. Our patient received both antifungals and steroids. This case is unique given her presentation, young age, and the relative rarity of this diagnosis. She will require life-long therapy though currently is stable and overall doing well.
responses. Funduscopic exam performed by ophthalmology revealed bilateral mild optic disc edema. Initial laboratory results included an erythrocyte sedimentation rate of 64 mm/h, white blood cell count of 13.5 thousand, normal cerebrospinal fluid studies, and negative immune studies. Further findings included a positive mononuclear spot test, elevated EBV IgG early (D) antigen (anti-EA), and markedly elevated EBV antibody to nuclear antigen IgG (anti-EBNA) consistent with recent EBV infection. Additionally, a <1 cm focus of subcortical heterotopia was noted on brain MRI. Intravenous methylprednisolone was administered which led to marked improvement with ability to track objects by day two of treatment. The patient was eventually discharged on a 10-day oral prednisolone taper and referred for follow-up with outpatient ophthalmology.

Discussion Epstein-Barr virus is a rare etiology of optic neuritis in children and should be considered in the primary workup in addition to MRI, lumbar puncture, autoimmune studies, and other infectious panels. A combination of visual and central nervous system changes can be observed, but these findings may be complicated in the pediatric population, due to difficulties obtaining a detailed history. It is important to inquire about symptoms such as somnolence, headache, and ataxia in combination with ocular findings such as papilledema, mydriasis, and vision loss. The combination of a positive anti-EA and anti-EBNA confirms the diagnosis of recent infection with EBV, which further supports the etiology of ON as it typically does not present during the acute infection period. The current standard treatment includes corticosteroids, which have been shown to accelerate symptom resolution. This case highlights the important role of EBV workup in pediatric optic neuritis and the wide variety of history and physical findings present as well as the importance of serologic studies and role of treatment in recovery.
was diagnosed with pneumonia and discharged on antibiotics. Patient returned 3 months later with similar complaints. Repeat chest x-ray revealed persistence left suprahilar opacity. CT chest showed mass and multilocular fluid collections in the anterior mediastinum. Work-up was done to rule out malignancy, fungal etiology, and TB, all of which were unre- markable. Patient followed up with pediatric surgery and underwent robotic-assisted excision of the mediastinal mass. Pathology reported thymic hyperplasia with benign cystic changes. Currently, patient is well.

Case 3: A 12 yo female with history of asthma hospitalized for right upper back pain in the scapular region and acute worsening of chronic cough. Chest x-ray showed right-sided hilar lesion, pleural effusion and middle lobe atelectasis. CT chest revealed middle mediastinal soft tissue conglomerate mass with mediastinal lymphadenopathy. Leukemia, lymphoma, and TB were ruled out. Biopsy of the mass was negative for malignancy. Serology revealed histoplasmosis. She was treated with itraconazole and is currently stable.

Conclusion Etiology and presentation of mediastinal masses in children differ based on location, which may be anterior, middle, or posterior mediastinum. When patients present with respiratory symptoms such as cough, we are inclined to assume the presence of a pulmonary infection. There must be a high index of suspicion if any abnormal mediastinal findings are noted in primary imaging. Further workup, including CT and biopsy, must be conducted in a timely manner and treated.

REFERENCES

Case reports in cardiovascular medicine
2:00 PM
Thursday, February 10, 2022

#39 RESPIRATORY SYMPTOMS OF THE 2019 NOVEL CORONAVIRUS WHEN THE SOURCE OF THE SYMPTOMS IS INTRA-CARDIAC THROMBUS NOT THE PNEUMONIA

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Case Report The 2019 Novel Coronavirus (COVID-19) is currently causing a global pandemic. Common symptoms are fever, cough, myalgia, fatigue, headache, dyspnea, sore throat, vomiting, and diarrhea. Patients may present with end-organ failure, ARDS, shock, acute kidney injury, or even death. We present a case of COVID-19 with shortness of breath caused by an intra-cardiac thrombus.

Case presentation An 84-year-old woman with COPD and diastolic heart failure presented with shortness of breath. She had hypoxemia on room air upon presentation. Lungs were clear on physical examination. COVID-19 PCR was positive. Her chest radiograph demonstrated no pulmonary infiltrates. Trans-thoracic echocardiography (TTE) demonstrated a large, irregularly shaped echogenic mass in both the right atrium and right ventricle consistent with a large thrombus. The mass in the right atrium was 3.9*3.6 cm; the portion in the ventricle was 3.2*2.2 cm. A previous TTE study in this patient did not reveal an intra-cardiac thrombus. No deep venous thrombosis was found. She was begun on anticoagulation and refused catheter-directed therapy. She improved and was discharged to her home.
Abstract #39 Figure 1

Discussion Thromboembolic complications of COVID-19 have been described in the literature. The most common are deep venous thrombosis and pulmonary embolism in critically ill patients despite the use of prophylactic anticoagulation. Several studies have reported post-mortem biopsies with widespread microthrombi. Arterial thrombosis with stroke and limb ischemia has also been described. Our case had an unusual presentation since the cause of her shortness of breath was the intra-cardiac thrombus. The pathogenesis beyond the hypercoagulability in COVID is not well understood. Some studies propose direct endothelial injury by the COVID-19 virus, causing microvascular inflammation, endothelial exocytosis, and endothelitis. Some experts propose a hypercoagulable state in COVID-19 patients based on elevated factor VIII, elevated fibrinogen, circulating prothrombotic microparticles, and neutrophil extracellular traps (NETs). Yet, no definitive mechanism has been identified.

#40 POST-COVID MYALGIC ENCEPHALOMYELITIS IN CHRONIC HEART DISEASE PATIENT: A CASE SERIES

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Purpose of Study Myalgic encephalomyelitis (ME), also called chronic fatigue syndrome, is a condition characterized by severe fatigue that impairs a patient’s ability to perform common daily activities. Criteria for ME include 6 months of fatigue-limited daily activities, unrefreshing sleep, and symptom exacerbation following physical or mental strain, and orthostatic intolerance. New reports indicate that ME incidence may be higher in specific patient populations. This study was designed to investigate the association between ME and Cardiomyopathy patients recovering from COVID-19 infection.

Methods Used The patient population used for this study includes 19 patients that were referred to the Amarillo Heart Group in Amarillo, TX who also tested positive for Covid-19 at least 6 months prior to September 1, 2021. The patients that fit this timeline were asked a series of standardized questions and rate the severity of their symptoms on a scale of 0 to 5, with 0 being the absence of symptoms and 5 being the most severe. Two sets of questions were created and named Life Spheres Criteria (4 questions) and Symptoms Criteria (3 questions) based on the 2015 IOM Diagnostic Criteria for CFS. Rating more than 1 Life Spheres question as a 3 or higher or rating all 3 Symptoms Criteria questions as a 3 or higher indicated Chronic Fatigue Syndrome. Information from the survey, including time since infection, demographics, and question scores, were analyzed.

Summary of Results Our study included 10 women and 10 men, with the average amount of time since Covid-19 infection being 328.17 ± 41.36 days. Worsening of symptoms with mild exertion was the most commonly endorsed criteria (3.58 ± 1.64) and the least common criterion was fatigue reducing activity in school (2.00 ± 1.94). Women scored higher in every category except reduced activity in school when compared to men. However, there was no significant difference in symptom scores between the two groups with the Combined Fatigue Score being 2.89 ± 1.47 for women and 2.67 ± 1.59 for men. Nearly all symptom scores significantly positively correlated with one another, meaning if one category was high it was likely for other categories to be high as well. Ultimately, when looking at the Cumulative Pearson Correlation Scores, reduced social life, difficulty concentrating, and symptoms worsening with mild exertion were found to be most predictive of a high Combined Fatigue Score.

Conclusions In this case series, over 80% of patients met the criteria for Post-COVID Myalgic Encephalomyelitis. While the link between ME and both COVID-19 and cardiovascular disease has been established, little is known about the severity of ME in patients who have a history of both cardiovascular disease and COVID-19 infection. To our knowledge, this is the first study to examine ME in patients with both of these predisposing conditions. A high degree of clinical suspicion for ME should be used when screening and treating cardiac patients who have been infected with COVID-19.

#41 AN UNUSUAL CASE OF MULTIPLE IDIOPATHIC CORONARY ARTERY ANEURYSMS

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Case Report Coronary artery aneurysms (CAAs), especially multiple, are a rare cardiac pathology and an unusual cause of cardiac chest pain.

Case A 39-year-old African American woman with hypertension and non-insulin dependent type II diabetes mellitus presented with one day of chest pain. The pain was exertional, pressure-like, and 10/10 in intensity, but also aggravated by lying flat and with deep inspiration. She was evaluated five months prior for a similar presentation and had negative cardiac stress test and normal echocardiogram at that time. She followed with cardiology and was compliant with a regimen that included aspirin, statin, beta blocker, calcium channel blocker, thiazide and metformin. On evaluation in the ER, BP was 162/92 mmHg and physical exam revealed clear lungs, a regular heart rate and normal rhythm without murmur, no lower extremity edema and some chest wall tenderness with palpation. Troponin was elevated to 0.9 ng/mL and EKG showed diffuse, dynamic T wave changes. A transthoracic echocardiogram revealed new LVEF of 35–40% and severe inferolateral hypokinesia. A subsequent coronary angiogram revealed no atherosclerotic disease but multiple succular...
coronary artery aneurysms: 6 mm in the left anterior descending artery (segment D1) and two 6–8 mm aneurysms in the left circumflex artery (OM1 lower pole and OM2 upper pole). The patient was discharged on long-term clopidogrel. Subsequent rheumatologic workup has been unrevealing and she continues to follow with cardiology.

Discussion Coronary artery aneurysms involving multiple vessels is an extremely rare finding, particularly in this patient without any other significant risk factors. CAAs should be considered as a rare differential diagnosis in a patient with cardiac chest pain who does not fit the classic ACS illness script. CAA require close follow up, and can be managed percutaneously, surgically, or medically, depending on factors such as size, location, and if they are causing cardiac ischemia. Further reporting and study of this rare condition is crucial for better understanding and delineation of best management.

Abstract #42 REVERSE TAKATSUBO FROM PROFOUND HYPOKALEMIA
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10.1136/jim-2022-SRMC.42

Case Report Reverse takotsubo cardiomyopathy is a rare variant of takotsubo cardiomyopathy which is characterized by basal wall ballooning and apical hyperkinesis. In this case, we present the first documented incidence of reverse takotsubo cardiomyopathy caused by profound hypokalemia.

A 62 year old male was resuscitated following cardiac arrest secondary to ventricular fibrillation in the field. After resuscitation, initial lab work was notable for hypokalemia with a potassium level of 2.5 and elevated cardiac biomarkers. The patient underwent emergent left heart catheterization which demonstrated angiographically normal coronary arteries. Interestingly, the cause of the patient’s cardiac arrest was determined by left ventricular angiography to be reverse takotsubo with a depressed EF of 20% (figure 1). Given that the patient had no recent physical or emotional stressors and no other significant lab findings, the etiology of the reverse takotsubo was determined to be hypokalemia caused by the patient’s only home medication, hydrochlorothiazide. The patient’s hypokalemia was corrected by standard electrolyte replacement. The patient’s reverse takotsubo was managed with standard therapy of a beta blocker and ACE inhibitor. Repeat imaging 6 months later demonstrated resolution of the patient’s reverse takotsubo and a normal EF. It should be noted that, takotsubo cardiomyopathy is a rare syndrome characterised by temporary and reversible left ventricular dysfunction that is provoked by a stressor that can be either physical or emotional. There are 4 types of takotsubo cardiomyopathy, reverse takotsubo is unique in that it causes ballooning of the left ventricular base rather than the apex. As evidenced in this case, takotsubo cardiomyopathy is generally considered a diagnosis of exclusion and patients must undergo detailed evaluation in order to exclude alternative causes of left ventricular dysfunction prior to diagnosis.

Abstract #43 HEART FAILURE SECONDARY TO NON-COMPACTATION CARDIOMYOPATHY
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10.1136/jim-2022-SRMC.43

Case Report Left Ventricular Non-Compaction (LVNC) is a rare congenital cardiomyopathy which carries a high risk of malignant arrhythmias, thromboembolic phenomenon and left ventricular dysfunction. This form of cardiomyopathy remains unclassified by the WHO and only recently the American Heart Association’s 2006 classification of cardiomyopathies considers noncompaction cardiomyopathy a genetic cardiomyopathy.

A 48-year-old male with no known comorbidities presented with new onset heart failure, NYHA Class III, ACC/AHA Stage C. TTE revealed severe global hypokinesis, EF 20%. Prominent trabeculations were noted in the LV apical and anterolateral segments. Stress cardiac MRI revealed non-compaction of the LV with a dilated cardiomyopathy. There was no evidence of stress induced myocardial ischemia. The patient responded to intravenous diuresis and was counselled on the diagnosis of LVNC cardiomyopathy, fitted with a LifeVest and discharged on warfarin anticoagulation.

LVNC is congenital cardiomyopathy characterized by extensive endomyocardial trabeculations and recesses within the ventricular cavity. These trabeculations are the result of an aberrant embryonic development, in which the initially ‘spongy’ myocardial fibrils fail to condense into the smooth, well-vascularized, and mature myocardium. The clinical sequelae of LVNC mainly involve congestive heart failure (CHF), arrhythmogenesis, thromboembolism, and a small percentage of patients may remain asymptomatic. The diagnosis is made through imaging, with echocardiography as the first-line method. Cardiac Magnetic Resonance Imaging has also emerged as a potentially superior method due to its 3-dimensional nature and higher image quality. After the diagnosis of LVNC is made, treatment is directed at the different elements of disease. Goal-directed medical therapy with Beta-blockers and Angiotensin-converting enzyme
inhibitors/angiotensin receptor blockers is indicated in LVNC patients with CHF, with most strategies deduced from the regular treatment of Heart failure with reduced ejection fraction. Due to the increased thromboembolism risk of LVNC, the strategy of anticoagulation has been a subject of debate.

Due to the genetic nature of the disease, it is recommended that a thorough 3 generation family history is obtained and genetic testing be done in appropriate relatives if a specific genetic mutation was determined. Genetic cardiomyopathies should be considered in the differential diagnosis of young patients presenting with symptoms of heart failure with no known comorbidities or prior history of cardiac disease.

Conclusions Despite minimal differences in baseline characteristics, implantation of CIEDs appear to be utilized less often in women than in men, less often in blacks than in white, and more often in urban hospitals. Further studies are required to confirm these findings and further explore gender differences.

#45 SHOCK THAT: A RETROSPECTIVE STUDY OF THE SAFETY AND EFFECTIVENESS OF INTRAVASCULAR LITHOTRIPSY FOR IN-STENT RESTENOSIS

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10.1136/jim-2022-SRMC.45

Purpose of Study Coronary calcium is an independent risk factor for adverse outcomes in coronary artery intervention. Modification of this calcium via intravascular lithotripsy is accomplished through acoustic pressure waves that disrupt the calcium and improve vessel compliance. Studies have shown intravascular lithotripsy is effective in the management of heavily calcified de novo coronary lesions. Evidence for use in in-stent restenosis is limited and is still off-label. The purpose of this study is to evaluate the effectiveness and safety of intravascular lithotripsy for management of calcium-mediated in-stent restenosis.

Methods Used A retrospective, single-center study was performed for four cases of in-stent restenosis with evidence of significant underlying calcium burden resulting in stent under-expansion and probable calcium intimal neoplasia. Lesions were treated with intravascular lithotripsy (Shockwave Medical). Angiographic success was defined as residual luminal stenosis of less than 30% and improvement in Thrombolysis in Myocardial Infarction (TIMI) flow. Complications were defined as vessel dissection, decrease in Thrombolysis in Myocardial Infarction flow, recurrent anginal symptoms, or death.

Summary of Results Four patients presented with symptomatic in-stent restenosis (60 to 80%) with previous angiography demonstrating significant calcium burden at site of involved stent placement. In-stent intravascular lithotripsy followed by angioplasty with non-compliant balloon inflations at high pressures was performed. In all cases, there was improvement in luminal stenosis to less than 30% as well as improvement in Thrombolysis in Myocardial Infarction flow to at least 2 (N = 3, TIMI 3; N = 1, TIMI 2). There were no complications identified in the study group.

Conclusions The role of intravascular lithotripsy has been established in patients with de novo calcified lesions. This study demonstrates the effectiveness and safety of intravascular lithotripsy for calcium-mediated coronary in-stent restenosis. Given the challenges of in-stent restenosis, particularly associated with underlying calcium, additional studies are warranted.

Abstract #44 GENDER DIFFERENCES IN CARDIAC IMPLANTABLE ELECTRONIC DEVICES (CIEDS) AND SYSTOLIC HEART FAILURE HOSPITALIZATIONS: DATA FROM THE NATIONAL INPATIENT SAMPLE 2016–2018

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Purpose of Study Gender differences in systolic heart failure (HF) patients for the implantation of various cardiac implantable electronic devices (CIEDs) using ICD-10 have not been studied. We aim to explore the gender differences for each type of procedure.

Methods Used The National Inpatient Sample (NIS) 2016–2018 was used to obtain the hospitalizations with HF (ICD 10 CM codes I5020, I5021, I5022, I5023). Pacemaker/Defibrillator procedures were obtained using ICD 10 procedure codes. Demographic data were obtained using the variables provided in the NIS

Summary of Results We identified 4,341,313 HF hospitalizations from January 2016 to December 2018. Overall, twothirds of patients were male (63.15%). Majority of hospitalizations were in the Whites (66% males & 63% females). Females were substantially greater Medicare beneficiaries (74% vs. 67% males). Among the CIEDs, males had a higher rates of procedure utilization compared to females: Percutaneous insertion of defibrillator in right ventricle (1.61% in males vs. 1.05% in females); Insertion of defibrillator generator, open surgery (1.15% in males vs. 0.72% in females); Percutaneous insertion of defibrillator lead in right atrium (1.13% in males vs. 0.75% in females); Cardiac resynchronization therapy-pulse generator (0.88% in males vs. 0.57% in females). Reword to support the conclusion.

Abstract #46 ACUTE NONISCHEMIC MYOCARDIAL INJURY WITH HIGH SENSITIVITY TROPNIN AND ITS PROGNOSTIC IMPLICATIONS

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10.1136/jim-2022-SRMC.46

Conclusions Despite minimal differences in baseline characteristics, implantation of CIEDs appear to be utilized less often in women than in men, less often in blacks than in white, and more often in urban hospitals. Further studies are required to confirm these findings and further explore gender differences.
Case Report Approach to acute nonischemic myocardial injury with high sensitivity troponin

Introduction 62-year-old male with a past medical history of CVA, hypertension was admitted following recurrent episode of substernal chest pain, provoked by exertion, not relieved by rest or nitroglycerine, and reproducible. Other risk factors include smoking half a pack-year for 45 years, hyperlipidemia, BMI 34, no family history of heart disease, carvedilol, aspirin, and statin. On admission, his BP was 158/113, HR 94/min, examination showed chest wall tenderness. EKG shows no acute ischemic changes, and Troponin was 103ng/l. His urine toxicology was positive for amphetamine and cannabinoids with serial troponins of 110 ng/l and 105 ng/l. Previous records show a chronically elevated troponin average of 93 in the past two months and 124ng/l last year. The nuclear stress test showed normal LV function, and TTE confirms no motion wall abnormalities with an EF of 60%. The BP was controlled with LV labetalol and amlodipine. He was observed for two days without any further events. Chest pain was more suggestive of costochondritis than cardiac. He was recommended to avoid weight lifting one week, smoking and drug cessation, and follow up with a cardiologist. In all three admissions, the patient was admitted and discharged with elevated troponins with no definite diagnosis.

Discussion Potential reasons a patient with clinically suspected acute MI may be misdiagnosed can be a) Test-related issues, b) myocardial injury not related to coronary artery atherosclerosis, and c) acute myocardial injury not related to the coronary circulation. In most high-sensitivity cardiac troponin (hs-cTn) assays, the 99th percentile URL values are higher in men than in women. The United States recommends sex-specific cut-off values; however, not adopted in Europe. A subgroup of these patients have a Type 2 MI, consequent to increased oxygen demand or decreased supply, and will not have significant epicardial coronary artery disease when coronary angiography is performed.

Conclusion The patients with acute ischemia and elevated troponin benefit from diagnostic coronary angiography and possible percutaneous coronary intervention. This may almost be true with hs-cTn assays, as the increased sensitivity means that more significant numbers of patients with type 2 MI will also be detected. Hence, these patients may not benefit from an invasive approach.

In most studies, short- and long-term mortality rates were higher in type 2 MI than in type 1 MI patients. In a multi-variable model accounted for competing risk of death between subgroups, the adjusted 5-year risk of MACE was lower in type 2 MI versus type 1 MI with risk ratio, 0.74 (95% CI, 0.62–0.88]). Higher mortality but similar or lower MACE rate among type 2 MI and nonischemic myocardial injury versus type 1 MI advocates this risk of death is from comorbidities rather than by complications of ischemia or necrosis.

#47 RESYNCHRONIZING A SYSTEMIC RIGHT VENTRICLE WITH LEFT VENTRICULAR SEPTAL PACING
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Abstract #47 Figure 1 Leads seen: preexisting LA and ICD lead, new LV septal lead

Case Report The patient is a 38-year-old man with a history of dextro-transposition of the great arteries for which he underwent an atrial switch (Senning) operation with VSD closure at 3 years of age. As an adult, he required pacemaker and ICD implantation for complete heart block and ventricular tachycardia. He endorsed functional class II symptoms in clinic. Cardiac CT demonstrated a hypertrophic and dilated systemic right ventricle (SRV) with an end-diastolic volume of 312 ml and ejection fraction of 32%. Right and left heart catheterizations demonstrated no coronary disease, normal filling pressures, and a preserved cardiac index. ICD interrogation revealed that the subpulmonic LV threshold was elevated and the battery was at replacement time. He had a 100% left atrial and left ventricular pacing burden without an underlying escape rhythm. ECG showed a QRS duration of 188 ms with a right bundle branch block (RBBB) pattern consistent with LV apical pacing.

He was referred for generator replacement and ventricular resynchronization. A plan was made to attempt His bundle pacing, and if that failed, to implant a new pacing lead in the LV septum. Left axillary venous access was obtained and an Agilis HisPro (Abbott, Inc.) steerable catheter was advanced to the subpulmonic LV via the superior systemic venous haffe. The His bundle could not be located, so we proceeded with placement of a lead in the interventricular septum. We first attempted placement of a Medtronic 3830 pacing lead; however, due to the tortuosity of the haffe, we could not affix the lead. We advanced a Medtronic 5076 pacing lead and, using a primary and secondary curved stylette, successfully positioned and affixed the lead to the LV septum. Pacing from this location demonstrated appropriate pacing and sensing parameters. ECG demonstrated persistent RBBB QRS morphology but with a narrower QRS duration of 140 ms, suggesting that more physiologic pacing was accomplished. Three months later, the patient reported functional class I symptoms. Repeat cardiac CTA imaging showed a reduction in RV end-diastolic volume from 312 mL to 279 mL and improvement in RV ejection fraction to 40.5% from 32%.
Case Report A 2-year-old male presented to the Emergency Department (ED) for the 3rd time in 2 months with staring spells and mild encephalopathy. Parents had also noted irritability, headaches, emesis, diarrhea, generalized erythematous rash, lymphadenopathy, and intermittent fevers. Symptoms started shortly after the family moved into a new home from out of state 2 months prior to presentation but had worsened in the preceding 2 weeks. Lab results during the prior two ED visits included microcytic anemia and elevated ESR; investigation for Kawasaki disease including TTE was negative and on both occasions was diagnosed with a presumed viral infection.

On this visit to the ED, he was febrile and tachycardic. Exam showed a tired, irritable, but consolable male with tachycardia with regular rhythm, faint bibasilar crackles, ocipital and inguinal lymphadenopathy, excoriations in various stages of healing over torso and legs. Workup revealed mild hyponatremia, elevated ESR, and reassuring head CT. He had an episode concerning for seizure while in the emergency department. Continuous EEG demonstrated focal seizures and MRI was unremarkable. He was started on oxcarbazepine and discharged home. Following discharge, patient continued to be sleepier than normal and re-presented to the ED. At this fourth visit, he had an unremarkable LP and persistently elevated ESR. He was noted to be hypertensive and tachycardic, for which EKG, BNP, and echo were unremarkable. A detailed social history was obtained and revealed the unexpected deaths of two family cats who died shortly after moving to the area, raising concern for environmental toxins. A CT chest/abdomen/pelvis during admission demonstrated extensive adenopathy but was overall reassuring against malignancy. A heavy metal panel was sent on admission and resulted with a mercury concentration of 50 mcg/L (ref: <10 mcg/L). Patient was subsequently given chelation therapy. One week later, the pump was removed with no complications. The patient was allowed to adjust the rate as needed after discharge. One week later, the pump was removed with no complications. These techniques were repeated periodically over a span of 176 days. Wound healing progress was documented with photos.

Discussion This case highlights several challenges with identification of a subacute pediatric environmental exposure. Acute mercury inhalation injury secondary to a solution being spilled then inhaled over at least a month presented initially as an acute upper respiratory illness. Later, the initial morbilliform rash was recognized as acrodynia, an idiosyncratic hypersensitivity to mercuric salts. Finally, the hypertension encountered in our patient presumably resulted from mercury’s inhibition of enzymes that catabolize circulating endogenous catecholamines, leading to a pseudopheochromocytoma presentation. Unfortunately, each of these symptoms can be found in a spectrum of clinical pathologies. The key to diagnosis in this scenario was the identification of the unexpected death of two pets that ultimately led to the timely detection of a very dangerous environmental toxin.

Case Report The management of pain in vaso-occlusive crises (VOC) in patients with sickle cell disease (SCD) often involves opioids, putting patients at risk for adverse effects. However, the management of VOC-related pain with continuous peripheral nerve blocks (CPNBs) shows potential as a viable alternative to opioids. The purpose of this study is to examine the outcome of a patient with a chronic non-healing medial malleolar ulcer related to repeated VOC which was effectively managed with a series of CPNBs.

Methods Used A 37-year-old female patient with SCD and acute-on-chronic pain due to a VOC-related chronic ulcer on her right medial malleolus was referred to the Acute Pain Service. The patient required daily oral opioids for pain control and had been hospitalized 15 times for pain control since the wound developed. With informed consent, a CPNB of the saphenous nerve was performed mid-high with an 18-gauge Touhy needle. An elastomeric pump was attached, and an infusion of 0.2% ropivacaine was initiated at 4 mL/hr. The patient was allowed to adjust the rate as needed after discharge. One week later, the pump was removed with no complications. These techniques were repeated periodically over a span of 176 days. Wound healing progress was documented with photos.

Summary of Results The wound was reduced to a small scab, and the patient no longer required opioids to manage her chronic wound pain. Hospital admissions for pain control decreased during the period of CPNB infusions and the average length of stay decreased by 2.6 days. Pain scores and opioid dosage also decreased. These metrics support the use of CPNBs for their ability to decrease costs and reduce opioid dependence.

Conclusions CPNBs can be used to effectively eliminate acute or acute-on-chronic pain and reduce opioid use, healthcare costs, and hospital visits in patients with VOC related to SCD. The degree to which the serial CPNBs contributed to the closure of the chronic wound in this case requires further study, however, there are plausible mechanisms by which a CPNB might contribute to wound closure. For example, the sympathectomy-induced vasodilation by perineural local anesthetic infusions increases blood flow and oxygen delivery to wounds, counteracting the peripheral vasoconstriction observed in reaction to acute pain.
Case Report  Anorexia Nervosa is a mental health disorder with significant morbidity and mortality. Acute food refusal is one of the indications for admission. We present a patient who went to extreme lengths to restrict food intake, requiring intensive care sedation and ventilation to enable enteral feedings.

12 year old male, was admitted with symptoms of anorexia nervosa and BMI of 12.0, (<1%ile) with baseline BMI of 16 (25%ile), K of 3.3 and glucose of 54. He was treated with supervised eating on an inpatient pediatric floor with no need for enteral feeding. Psychiatry consultation confirmed the diagnosis of anorexia nervosa and recommended the addition of Olanzapine to his Sertraline. He was discharged pending placement in an eating disorder center after 21 days of hospitalization with discharge BMI of 14.

He was followed as an outpatient by his pediatrician, dietician and counselor but unfortunately, he required readmission 11 days after discharge due to acute food refusal, with BMI that had dropped to 13.1. Patient was readmitted and started on nasogastric (NG) feeds but he became severely agitated, pulling NG out multiple times and continued to lose weight with BMI dropping to 12. Sedation was attempted to facilitate maintenance of NG feedings, with Benadryl, Haldol and Ativan, but was ineffective at levels deemed safe without compromising his airway and breathing.

Due to severe malnourishment and unsuccessful NG feeds he was transferred to PICU for sedation, endotracheal intubation and continuous nasoduodenal (ND) tube feedings on two separate occasions while inpatient. He was able to wean from the ventilator but once awake he found ways to manipulate delivery of his calories, even finding scissors and cutting the ND tube. The patient ultimately agreed to eat in order to avoid replacement of the feeding tube.

He was finally transferred to an eating disorder facility, with a BMI of 13.9 and persistent anorexia thinking with restriction of eating anything but pizza. Patient completed three months of an inpatient program and had significant improvement in BMI to 19.3 (70%ile). He was subsequently discharged for continued outpatient follow-up and since discharge from the eating disorder center, his BMI has shown steady improvement in outpatient follow-up. He shows no signs of food refusal and is doing well with Family Based Therapy.

This case highlights several unique characteristics in management of eating disorder patients. The age and being male along with extreme food refusal and resistance to enteral feeding that led to the requirement of deep sedation are quite unusual and not well described in the medical literature. The severity of his illness was a significant barrier to inpatient
Impact of Obesity on Hospital Admission and Length of Stay in Children with Status Asthmaticus (SA)

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Purpose of Study: Asthma is an obstructive, inflammatory lung disease which is often recognized by wheezing and increased work of breathing. Although mild exacerbations may be controlled in an outpatient setting, an episode of significant exacerbation may lead to status asthmaticus (SA). With increased prevalence in pediatric populations, SA generates concern for hypoxic injury and mortality. Obesity is also associated with adverse outcomes leading to significant morbidity in asthmatic populations. However, the association in children, particularly those with acute asthma has remained poorly defined. This study aims to investigate the relationship between obesity and SA in children requiring hospital admission.

Methods Used: The charts of patients aged 2-18 years with SA admitted to the Children’s Hospital of Georgia (CHOG) from July 2020 to August 2021 were reviewed in a prospective manner. The data collected included the following: age, which was divided into 3 groups (2-5, 6-12, >12), gender, severity of asthma, insurance type (none, Medicaid or private), risk factors (smoking exposure, split family), comorbidities, clinical asthma score, inpatient medical management, discharge medications, weight percentile for their age (<50th, >50th, and >85th), and length of stay (LOS) in Pediatric Intensive care unit (PICU) and or hospital. Patients with weight percentile greater than 50% were considered obese and weighing more than the 85th percentile were designated significantly obese. Prolonged LOS was considered greater than 48 hours in the PICU and or inpatient. Patients with chronic lung disease (e.g., Cystic Fibrosis) were excluded from the study.

Summary of Results: A total of 163 (female 67, male 96) charts were analyzed. Multivariable contingency analysis using Fisher’s exact test was performed to assess p-values. Nominal logistic regression was used to assess the covariates. The number of patients in the 3 age categories were 59, 75, 29 respectively. There was a difference in the 3 age categories for LOS with a p-value of 0.27. Patients with significant obesity were admitted more often and had prolonged LOS in comparison to non-obese patient in all the 3 age categories, p-value: 0.048. Patients with mild obesity had similar results. Patients with no insurance or Medicaid had more admissions and prolonged stays but the difference was not statistically significant. (p-value 0.06). The logistic regression model analysis revealed no difference in hospital admission rate LOS when compared with with gender (p=0.24), severity of asthma (p=0.16), or social factors (p=0.16).

Conclusions: Childhood asthma is a common illness within the pediatric population. In our study it appears that obesity is a major morbidity factor in childhood asthma. It plays a significant role in exacerbation of acute asthma leading to hospital admission and increased LOS. Further studies are needed to explore the relationship of obesity and acute asthma.

Coexistence of Child Maltreatment and Intimate Partner Violence: A Retrospective Look at Outcomes

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Purpose of Study: The term intimate partner violence (IPV) describes physical or sexual violence, stalking, or psychological harm by a current or former intimate partner or spouse. The literature establishes a strong association between IPV and childhood maltreatment, which often co-occur. Long term consequences of childhood IPV exposure include increased risk of future victimization, perpetration of violence, and higher risk for sexual abuse. It is still unclear if screening for other forms of violence in the home during a child maltreatment evaluation is beneficial. We hypothesized children experiencing both maltreatment and IPV at their index medical exam are more likely to have medical exams for additional abusive events in the future.

Methods Used: A retrospective cohort study was conducted following children in Oklahoma who were diagnosed with one or more forms of confirmed or suspected child maltreatment and assessed at the Tulsa Children’s Advocacy Center (CAC) from October 1, 2016-September 30, 2019. Each child’s first visit during the study timeframe acted as the index encounter for IPV screening. Hospital consults were excluded from analysis, however; follow-up visits at the CAC were included as index visits. Demographic, medical, and social history data were collected from the electronic medical record for visit with a suspected or confirmed child maltreatment ICD-10 code. Analysis included descriptive statistics and Welch’s ANOVA comparing the mean number of events for children with documented IPV exposure vs children without documented IPV exposure.

Summary of Results: A total of 1370 children met study inclusion criteria with most being white (n=811, 59.2%), non-hispanic or Latino (n=810, 59.1%), and female (n=724, 52.8%) and a mean age of 6.99±4.59 years. The top diagnosis codes used were Child Physical Abuse, Suspected (n=612, 42.68%), Child Physical Abuse, Confirmed (n=359, 25.03%) and Child Sexual Abuse, Suspected (n=298, 20.78%). Two hundred and eighty-nine children (21.1%) had a history of IPV documented in their initial medical exam. Of those children with known IPV history, only 11 had additional medical exams prompted by new allegations of abuse compared to 26 children with no-IPV. There was not a statistically significant difference in the mean number of medical exams between the IPV and no-IPV cohorts (p=0.336).

Conclusions: While this analysis did not yield statistically significant results, it does create additional questions regarding the effectiveness of screening, and if the presence of IPV influences the decision to remove children from the home, thus mitigating the chance for future abusive events. We postulate that IPV screening is inadequate and fails to catch many cases due to the multifactorial nature of disclosing violence in the home.
as well as the hidden and taboo nature of family conflict. We plan to expand our data to include non-medical visits related to new abusive events in our future analyses.

**Purpose of Study**

Prior studies have demonstrated patterns of risky decision-making and sexual health practices among juvenile justice-involved youth. However, there is limited research on the relationship between these two behaviors. The purpose of the study is to examine reported condom use and decision-making skills among juvenile justice-involved youth.

**Methods Used**

Youth at a large, urban juvenile detention facility in the Southwestern US completed a four-part survey assessing: education and goals; condom use; the Decision-Making Scale (DMS); and the Post-Detention Likelihood to Succeed Scale (PDLSS). Within the DMS, four constructs were tested: generating options, considering consequences, evaluating decisions, and decision-making efficacy. Both the DMS and PDLSS used a four point Likert scale.

**Summary of Results**

91 youth participated; 89 completed both the DMS and PDLSS. 82.4% were male and 86 (94.5%) were sexually active. Of the eighty-six, 52.3% reported using condoms during sexual activities ≥50% of the time. However, only 33.7% reported using a condom during their most recent sexual encounter. Most common reasons given for not using condoms included knowing the status of their partner, disliking the feel of condoms, and not having a condom available at the time. Respondents who reported ≥50% condom usage scored higher on the DMS than those reporting <50% condom usage. The ≥50% condom group scored higher in all four of the DMS constructs, however this did not reach statistical significance. Additionally, no difference was observed for the PDLSS.

**Conclusions**

Youth in this study who reported more frequent condom use scored higher on the DMS compared to their peers who reported <50% condom use. Although the findings were not statistically significant, there was a trend among all four of the DMS constructs. Results from this study can be used to shape educational programs designed to foster healthy decision-making among juvenile justice-involved adolescents.

Future study plans involve recruiting a larger sample of female participants and assessing relationships between short-term/long-term goals and sexual behaviors.

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**Acute Paralysis as an Initial Presentation of Graves’ Disease Thyrotoxicosis**

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**Case Report**

Graves’ disease is an autoimmune disease that affects multiple systems, including the thyroid, skin, and eyes. The most common cause of Graves’ disease is hyperthyroidism, which affects almost all patients. It is caused by thyroid-stimulating hormone with excess thyroid hormone synthesis and secretion. Thyrotoxicosis is when the excess thyroid hormone synthesis and secretion cause clinical manifestations, including tachycardia, weight loss, diarrhea, pre-tibial myxedema, and proptosis. An overactive thyroid can also cause electrolyte abnormalities, such as hypokalemia, which can lead to acute paralysis. Initial treatment includes symptomatic care with beta blockers, such as atenolol until thionamides can be started, or radioiodine ablation or surgery.

**Case Description**

A 16-year-old previously healthy male with no significant past medical history presented from an outlying emergency department with tachycardia, acute paralysis upon waking, and hypertension. Thorough history revealed he had several missed school days due to diarrhea and chills. He also had a family history of Brugada syndrome in his older brother. Physical exam revealed a well-appearing male with tachycardia, without proptosis, periorbital edema, or pre-tibial myxedema. Initial testing revealed significant hypokalemia of 2.8, hypertension (146/90), and sinus tachycardia of 130 bpm. Further work up revealed a decreased TSH of <0.01, elevated Free T4 of 2.8, and increased Anti-Thyroglobulin antibody of >1000 and anti-TPO antibodies of 378. Pediatric Endocrinology was consulted and recommended thyroid imaging and starting atenolol 100 mg daily. His hypokalemia was corrected with 20 mEq intravenous potassium chloride, and thyroid uptake scan showed increased uptake concerning for Graves’ disease. During outpatient follow up, he was continued on atenolol 100 mg and methimazole 10 mg BID by Pediatric Endocrinology, and referred to Pediatric Cardiology for persistent tachycardia and family history of Brugada syndrome. He was also referred to Electrophysiology for further evaluation.

**Discussion**

Graves’ disease thyrotoxicosis can have varying clinical manifestations, including electrolyte disturbances such as hypokalemia, which can cause acute paralysis. Although the cause of hypokalemia in Graves’ disease is unknown, it is hypothesized that elevated levels of thyroid hormone increase Na⁺/K⁺ ATPase activity, which results in an increased shift of potassium into cells. Thus, causing decreased potassium in the circulation and leading to hypokalemia. While hypokalemia may not be the first presenting symptom of Graves’ disease, any patient with complaints of acute paralysis upon waking should be evaluated and treated for hypokalemia. Persistent symptoms of tachycardia, should be further evaluated to rule out other pathologies.
A NON-INFECTIONOUS CAUSE OF CHRONIC SINUSITIS

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Case Report Granulomatosis with polyangiitis is a microscopic vasculitis that can cause sinusitis (as well as other ear nose and throat issues), disease of the lung parenchyma, glomerulonephritis, and signs and symptoms of systemic inflammation. A 12 year old girl presented from ENT clinic following a 9 month history of chronic recurrent sinusitis. She had failed multiple antibiotic regimens for presumed bacterial sinusitis and culture of sinususes had consistently shown no growth. She had a 10 pound weight loss in the two weeks prior to admission. Other symptoms included headache and chest wall pain with deep inspiration. 1 week prior to presentation, she was seen in the emergency room where a maxillofacial CT was obtained and showed pan-sinusitis. On admission, Vital signs were within normal limits and physical exam was unremarkable other than the patient having dried blood around the inside of both nares. Laboratory workup showed leukocytosis and thrombocytosis as well as elevated ESR and CRP. ALT was mildly elevated but CMP was otherwise within normal limits. UA was significant for microscopic hematuria. Repeat CT confirmed previous finding of pansinusitis. A chest xray was obtained which showed an apical lung nodule. Diagnostic workup showed elevated c-ANCA titer and biopsy of sinususes showed vasculitis with necrosis and granulomas consistent with a diagnosis of granulomatosis with polyangiitis. Although this patient presented with sinusitis, she was also found to have lung and kidney involvement which is often seen with this type of vasculitis. The patient was started on a course of prednisone and azathioprine as induction therapy and is following with rheumatology. This case presents us with typical findings associated with granulomatosis with polyangiitis and reminds us of the importance of reevaluating a patient’s diagnosis when therapeutic interventions fail. While GPA is usually seen in older patients, it is important to be aware that it can present at any age.

TESTOSTERONE LEVELS IN ADOLESCENT MALES HOSPITALIZED FOR MALNUTRITION

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Purpose of Study Previous studies among malnourished disordered eating patients have shown differences in menstrual patterns between female patients with Avoidant Restrictive Food Intake Disorder (ARFID) and Anorexia Nervosa (AN), potentially related to the fat content of recently consumed food. Little has been written about testosterone levels and testosterone level recovery among malnourished males. The purpose of this study is to describe testosterone levels in adolescent males at both presentation and later in hospitalization for refeeding.

Methods Used Patient data of all males admitted to a disordered eating unit at a children’s hospital between January 2014 and December 2020 were reviewed. Of these, 40 males had a testosterone level drawn, of whom 16 had two or more testosterone levels recorded during a single inpatient stay. Data extracted during retrospective chart review included BMI on admission; %mean estimated BMI (MEBMI) was calculated per CDC growth charts. Additional data points collected included eating disorder (ED) diagnosis, sexual maturity rating (SMR), demographic variables including age, and whether the patient had eaten ‘junk food’ defined as fried foods, chips, pizza, traditional fast food, sugared soda, sweets or desserts in the reported diet history from the 24 hours prior to admission. Analysis included frequencies, determinations of normality for continuous variables, T-test or Wilcoxon-Mann-Whitney test (as appropriate), and robust regression.

Summary of Results 34 male patients were included in the initial analysis. Their mean age was 16.3 years. 17 patients had a diagnosis of AN; 17 patients had a diagnosis of ARFID. The mean age (16.7 for ARFID, 15.9 years for AN) and median SMR (5, for the patients for whom it was available) were not significantly different between groups, nor were testosterone levels on admission to the hospital. Patients with ARFID (72.0%) had a lower%MEBMI (p=0.003) at presentation than those with AN (82.9%). Regression analysis using testosterone as the dependent variable and controlling for% mean estimated BMI did not show a significant association of ED diagnosis with initial testosterone level. The proportion of subjects reporting junk food consumption 24 hours before admission was not significantly different among those with ARFID (88%) and those with AN (69%). Among the 16 patients with more than one testosterone value, mean age was 15.8 years, median BMI was 15.3 kg/m, %MEBMI was 77.9%, and median time to second measured testosterone value was 11.5 days (range of 3-30.5 days). Paired t-test showed significantly greater testosterone levels at the second evaluation than the first. The mean difference between testosterone levels 1 and 2 was 156 ng/dL (p=0.01).

Conclusions Testosterone levels for malnourished adolescent males rebound quickly with refeeding. ED diagnosis and consumption of ‘junk food’ do not appear to be independently associated with testosterone levels at admission.

A CASE OF ORBITAL CELLULITIS COMPPLICATED BY MUCORMYCOSIS IN A DIABETIC TEEN

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Case Report Patients with diabetes mellitus may experience increased infection frequency and severity, particularly those with poor glucose control. The immunocompromised state in poorly controlled diabetic patients is caused by the hyperglycemic environment that favors immune dysfunction. Mucormycosis is a rare invasive fungal infection which occurs primarily in immunocompromised individuals, mostly in patients with diabetes. Invasive mycosis is associated with high mortality and morbidity.

An 18-year-old male with a past medical history of poorly controlled diabetes mellitus and multiple prior admissions for diabetic ketoacidosis (DKA) presented with left-sided eye pain and headaches for three days. Initial examination revealed mild periorbital swelling and pain, intact extraocular movements, and normal vision. He soon progressed to have limited upward gaze (-3 to -4) and adduction (-0.5) along with blurred vision in the left eye. Laboratory results were significant for a hemoglobin A1C of 13.7, baseline creatinine of...
1.10, and no evidence of concurrent DKA. Admission computed tomography (CT) showed orbital apex inflammation with a 1 cm subperiosteal-appearing abscess along the orbit, lamina papryracea erosion, and ethmoidal air cell mucosa thickening.

The patient was started on meningeal doses of vancomycin and piperocillin/tazobactam. Initial fiberoptic endoscopic sinus surgery to drain the abscess revealed healthy appearing tissue and no purulent drainage, with resultant negative cultures and histopathology. Several surgical procedures were necessary to provide a definitive histopathological diagnosis and containment of the fungal infection. Ultimately, sp. rhicoucor was identified. The patient was treated with three doses of intraorbital amphoterin B and three weeks of intravenous liposomal amphoterin B. He transitioned to oral isovaconazole for an additional three weeks upon discharge. Subsequent magnetic resonance imaging (MRI) showed concern for thromboembolitis of the superior ophthalmic vein, necessitating prophylactic dosing of Lovenox during his inpatient course. His insulin regimen was closely monitored and adjusted during hospitalization, as tight blood glucose control was important to his clinical progression.

This case of non-classic orbital cellulitis highlights the importance of recognizing the increased risk of rhinocerebral mucormycosis in patients with poorly controlled diabetes mellitus. Susicion for mucormycosis should prompt surgical debridement with tissue biopsies adequate for histopathology and initiation of systemic antifungals if the course appears rapidly progressive. In our patient, aggressive techniques were used to successfully contain and treat the fungal infection thus limiting morbidity and mortality associated with his diagnosis.

Summary of Results Thus far, the project has been implemented for a total of eight weeks with one PDSA cycle completed. Of eligible patients screened, a total of 39 patients at high risk for dental caries have received a fluoride varnish application.

Conclusions Dental screening and fluoride varnish are an important part of primary care, are part of the Bright Futures guidelines, and can be implemented in resident pediatric clinics to help improve the oral health of high-risk pediatric populations. Further PDSA cycles are needed to improve dental screening and fluoride varnish application in this ongoing QI study.

IMPROVING ORAL HEALTH IN PRIMARY CARE THROUGH FLUORIDE VARNISH APPLICATION

Dental caries is one of the most common chronic diseases of childhood. USPSTF and Bright Futures guidelines recommend fluoride varnish application in the medical home to the primary teeth of all infants and children starting at primary tooth eruption as part of health maintenance and preventative care. The resident continuity clinic at UTHSC is the medical home to a large number of patients at risk for dental caries. Prior to this project, providers were not routinely conducting dental screenings and fluoride varnish was not being applied in clinic. This project was implemented to improve the oral health of the patients seen in the resident clinic by routinely performing dental screenings and applying fluoride varnish to eligible patients.

Methods Used A multidisciplinary team was created to establish a clinic-based screening and application program following a traditional PDSA model. An oral risk assessment tool and screening form was created using AAP and Bright Future oral health guidelines. These assessed a child’s risk for caries and access to dental care. Dental screenings and fluoride varnish applications were implemented at routine well child checks (every 6 months from 6–60 months of age). Completed fluoride varnish applications were recorded weekly for review.

Case Report Cocaine is a highly addictive stimulant drug that has surged in use and mortality in the United States in the past five years. Approximately 70% of street cocaine is contaminated with levamisole, a synthetic agent used to potentiate its effect by increasing endogenous opioids and dopamine levels in cerebral reward pathways. In medicine, cocaine has been the culprit of many diseases. Nevertheless, its ability to mimic other etiologies can make the diagnosis a challenge. This is the case of a young female whose history and physical findings were vital for diagnosing a rare drug-induced vasculitis.

A 30-year-old female with chronic cocaine abuse was admitted with bilateral lower extremity ulcers for IV antibiotics and surgical cleansing and debridement. Upon evaluation, she also complained of tender black lesions throughout her body that had worsened in the past week after snorting cocaine. Associated symptoms included subjective fever, general weakness, and pain. She reported the use of intranasal and IV cocaine and smoked a pack of cigarettes daily. She was hemodynamically stable and afebrile. On physical examination, dry gangrene was observed on her left second finger. Multiple tender, purpuric lesions were observed on arms, abdomen, distal digits, and bilateral toess. Her ears had a painful, dusky purple rash with erythematous borders and necrosis, mainly on helix/antielix. Lower extremity ulcers were treated with debridement and antibiotics. Labs were remarkable for leukopenia and iron deficiency anemia. Renal function was preserved. Hepatitis panel, RPR, and HIV were negative. However, she had + cryoglobulin, + p-ANCA, + cardiolipin IgG/IgM, + ANA (1:320, homogenous), and + DS-DNA (1:20). No imaging evidence suggestive of osteomyelitis. Up to this point, the differential diagnosis included autoimmune connective tissue disease, septic vasculitis, antiphospholipid syndrome, blood dyscrasias, and drug-induced etiologies. Skin punch biopsy was remarkable for leukocytoclastic vasculitis with intraluminal thrombi. The patient’s history of cocaine use, clinical morphology of lesions, and anatomic distribution, as well as histopathologic findings, were consistent with levamisole-induced leukocytoclastic vasculitis (LIV). The patient was treated with supportive management given no end-organ damage was identified. Cessation of cocaine was advised to avoid recurrences.
Levamisole-induced leukocytoclastic vasculitis is associated with 3 clinical syndromes: destructive skin lesions, cutaneous vasculitis, and agranulocytosis. Therefore, diagnosis is achieved based on clinical presentation linked to histopathological findings. Interestingly, LIV can mimic other rheumatologic etiologies by presenting +ANA, +DS-DNA, + cardiolipins, and +cryoglobulins. Knowing about LIV clinical presentation, histopathology, and laboratory findings is imperative to establish an accurate diagnosis and determine if management is supportive or more invasive (immunosuppressive therapy).

#60 PEDIATRIC CASE OF COVID-19 ASSOCIATED RHABDOMYOLYSIS

M Markow*, CG Lares Romero, MN Frascogna. The University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.60

Case Report According to the Center for Disease Control, Severe Acute Respiratory Syndrome Coronavirus 2 (COVID-19) may present with a wide range of symptoms. Among those, fever, cough, and shortness of breath are commonly present. While COVID-19 associated myalgias is reported as a symptom, we present a case of COVID-19 related rhabdomyolysis.

This is a previously healthy 13-year-old obese male who arrived to an outside hospital in respiratory distress after a 1-week history of nasal congestion, productive cough, shortness of breath, emesis and diarrhea associated with malaise and muscle weakness sensation. On presentation he was hypoxic (O2 sat 87%), tachypneic and had increased work of breathing for which was initially treated with 2 liters per minute of oxygen by nasal cannula and fluid resuscitation. The patient had a rapid COVID antigen test that was negative, a chest x-ray which showed bilateral infiltrates (worse on the right), normal complete blood count and normal electrolytes. However, he was found to have an elevated serum creatinine (1.2), an elevated creatinine kinase level (1264 U/L) and serum myoglobin (97.2 ng/ml) leading to him being diagnosed with acute kidney injury secondary to viral induced rhabdomyolysis and pneumonia. He was treated with antibiotics (Azithromycin and Ceftriaxone) and aggressive fluid resuscitation and transferred to our hospital for further care. At our facility, antibiotics were discontinued after a COVID-19 PCR testing resulted positive. Aggressive fluid resuscitation was continued to treat rhabdomyolysis and he received a course of Remdesivir and Decadron to treat COVID-19 infection. The patient then recovered and was discharged home on the 5th day.

Rhabdomyolysis is a life-threatening condition that occurs when muscle necrosis results in the release of its intracellular contents into circulation. In the pediatric population, viral myositis has been reported as a leading cause. It is commonly diagnosed by elevation of serum creatine kinase (CK) and presence of myoglobinuria. Clinically, patients with rhabdomyolysis may be asymptomatic or present with severe disease characterized by myalgias, massive CK enzyme elevations, severe electrolyte imbalances and acute kidney injury. While rhabdomyolysis has previously been reported as a rare complication of COVID-19 infection, there are fewer reports of rhabdomyolysis secondary to COVID-19 in the pediatric population. This case illustrates the importance of suspecting this life threatening condition in patients with COVID-19 infection complaining of myalgia or muscle weakness to avoid the severe complications. Of note, while we did not test specifically for the Delta variant, given the time frame of the patient’s presentation, we may consider the possibility of COVID-19 Delta variant related rhabdomyolysis.

#61 INFLUENCE OF SEX, ETHNICITY, SOCIOECONOMIC STATUS, AND BREASTFEEDING STATUS ON DEVELOPMENT OF CHILDHOOD OBESITY

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10.1136/jim-2022-SRMC.61

Purpose of Study To identify influence of male sex, African American, low socioeconomic status, and non-breastfeeding status on development of overweight and obesity on children age 2, 3 and 4 years old.

Abstract #61 Table 1

<table>
<thead>
<tr>
<th>Gender</th>
<th>2 Years</th>
<th>P-value</th>
<th>3 Years</th>
<th>P-value</th>
<th>4 Years</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>82.17</td>
<td>0.685</td>
<td>82.17</td>
<td>0.685</td>
<td>82.17</td>
<td>0.685</td>
</tr>
<tr>
<td>Female</td>
<td>82.17</td>
<td>0.685</td>
<td>82.17</td>
<td>0.685</td>
<td>82.17</td>
<td>0.685</td>
</tr>
</tbody>
</table>

Socioeconomic status (SES) and race were categorized as follows: African American (AA) and non-African American (Non-AA). Sex and breastfeeding status were categorized as follows: Male and female and breastfed and formula fed, respectively. The chi-square test was used to test the association between these factors and overweight/obesity status.

Note: All collected data were organized in an Excel spreadsheet. This data was analyzed using Excel. This study was approved by the University of Texas Health Science Center and the Juvenile Justice Center internal review boards.

The answers to these screening questions determine which youth are admitted to these intake screening questions, the completion of extra-genital STI screening and the completion of the introduction of new screening questions. The testing for oropharyngeal STIs significantly decreased from 2019 to 2020, from 40.1% to 33.5%, while the testing for anal gonorrhea or chlamydia significantly decreased from 2019 to 2020, from 25.9% to 10.9%. However, the testing for rectal STIs decreased from 2019 to 2020, from 33.5% to 25.9%. However, the testing for rectal STIs decreased from 2019 to 2020, from 33.5% to 25.9%.
Abstracts

Methods Used A retrospective cohort study of children born at University of South Alabama Children’s and Women’s Hospital from May 2011 to October 2013. Included participants had at least one well child visit between ages 2 years to 4 years old. Preterm birth, small for gestational age, and patient with comorbidities were excluded from the study.

All collected data were organized in an Excel spreadsheet and analyzed using statistical software JMP 15.2.0. All categorical data was summarized using percentages. Association between categorical variables was studied using Fisher's test or Chi square test.

Summary of Results There were 1,178 children were identified by ICD codes. A total 612 children met inclusion and exclusion criteria for this study.

At 2 years of age, there were 401 children included. No significant association were observed between overweight or obesity and sex (p = 0.0596), race (p = 0.078), socioeconomic status (p = 1.000) or breastfeeding status (p = 0.3643).

At 3 years of age, there were a total 329 children included. No significant association were observed between overweight or obesity and sex (p = 0.8374), race (p = 0.2229), socioeconomic status (p = 0.8462) or breastfeeding status (p = 0.6035).

At 4 years of age, there were a total 328 children included. No significant association were observed between overweight or obesity and sex (p = 0.8448), race (p = 0.1864), socioeconomic status (p = 0.6852) or breastfeeding status (p = 0.3050).

Conclusions No association between sex, race, socioeconomic status or breastfeeding status and childhood overweight or obesity at age 2, 3 and 4 years.

Environmental factors and lifestyle, rather than biological factors, may play importance role in childhood obesity. Further studies are warranted.

Purpose of Study A prior study conducted at a large, Southwestern juvenile detention facility in 2019 revealed that only 33.5% of youth reporting oral sex and 25.9% of youth reporting anal sex were tested for extragenital sexually transmitted infections (STIs). Since many extragenital infections are asymptomatic, testing is crucial for diagnosis and treatment. For the past year and a half, the COVID-19 pandemic has created new challenges for medical care, especially in detention centers where large numbers of youth reside close together. While several studies have found recent decreased rates of STI screening, little is known about how the pandemic affected screening for extragenital STIs for juvenile justice involved youth.

Methods Used A retrospective chart review from March 1, 2020 to June 31, 2021 was conducted; only youth seen by a physician for an intake physical exam were included. During the intake physical exam, youth are asked if they have ever put their tongue or mouth on someone’s penis, vagina or anus and if anyone has put their penis in their anus. The answers to these questions determine which youth are eligible for screening of extragenital infections. The answers to these intake screening questions, the completion of extragenital testing, and lab results were input into an excel spreadsheet. This data was analyzed using Excel. This study was approved by the University of Texas Health Science Center and the Juvenile Justice Center internal review boards.

Summary of Results A total of 574 youth were seen for their intake physical by a physician during this time. 86% were male, the mean age was 15.4 (range 11–17), and 48.6% were black. Of these youth, 224 (39%) reported performing oral sex and 128 of those youth (57%) were tested for oropharyngeal STIs. 7 had unsatisfactory samples, while 1 (0.78%) had oral gonorrhea and 1 (0.78%) had oral chlamydia. There were 20 (3.48%) of all youth attesting to having received anal sex. Of these, 4 (20%) were tested for anal STIs and all were negative for anal gonorrhea or chlamydia.

Conclusions The testing for oropharyngeal STIs significantly increased despite the COVID-19 pandemic, from 33.5% to 57%. However, the testing for rectal STIs decreased from 25.9% to 20%. While the prevalence of extragenital STIs at our facility also decreased during the pandemic, it is still necessary to continue testing since many extragenital STIS are largely asymptomatic. As providers offer more testing, it will be important for them to appropriately educate patients and decrease stigma of extragenital testing so that screening rates can improve.

Adult case reports, aging and geriatrics

Thursday, February 10, 2022

Joint plenary poster session and reception

4:30 PM

#62 SCREENING FOR EXTRAGENITAL SEXUALLY TRANSMITTED INFECTIONS DURING THE COVID-19 PANDEMIC

1AC Ybarra*, 1LI Benjamin, 1The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX, 2Wayne State University School of Medicine, Detroit, MI

10.1136/jim-2022-SRMC.62

#63 A CASE OF NECROLYTIC ACRAL ERYTHEMA ASSOCIATED WITH CHRONIC HEPATITIS C

L Abusalem*, S Matlock, HK Wong. University of Arkansas for Medical Sciences, Little Rock, AR

10.1136/jim-2022-SRMC.63

Case Report A 50-year-old gentleman known to have chronic hepatitis C and polysubstance use disorder presented with a skin rash of several months’ duration involving the soles of both feet and the Palmer aspect of both hands with sparing of the hand joints. Labs were notable for negative antinuclear antibody panel, and serum Zinc level of 24.2 (normal reference range of 60–120 ug/dL). Skin biopsy showed an interface dermatitis with prominent basal as well as superficial dyskeratosis, confluent parakeratosis, and a vacuolar interface pattern suggestive of Necrolytic Acral Erythema. This is a pruritic skin disease that’s a rare extrahepatic manifestation of hepatitis C and is strongly associated with zinc deficiency.

The patient was offered zinc replacement therapy (which should be given regardless of serum levels as epidermal levels can be low and zinc plays a role in necrolysis) in addition to antiviral therapy which he could not afford due to socioeconomic barriers.
A CASE OF CEFIDEROCOL-INDUCED POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME

L Abusalem*, T Sharma, H Salah, JC Rico-Crescencio, R Jagana. University of Arkansas for Medical Sciences, Little Rock, AR

Abstracts

On the left, the dorsal aspect of the right hand shows erythematous plaques with variable scaling and erosions. On the right, palmer aspects of both hands show erythematosus and violaceous plaques with desquamation and sparing of the metacarpophalangeal, proximal and distal interphalangeal joints.

The histologic features in this skin biopsy light microscopy slide show an interface dermatitis with prominent basilar as well as superficial dyskeratosis. In accordance with these features and in light of the patient’s lab work showing a very low serum zinc level, and in conjunction with his known history of hepatitis C virus (HCV), the possibility of this rash representing a nutritional deficiency is somewhat favored, specifically necrolytic acral erythema.

#65 ASSESSMENT OF DEPRESSION AND ANXIETY IN RESIDENTS OF A CONTINUING CARE RETIREMENT COMMUNITY DURING THE COVID-19 PANDEMIC QUARANTINE

1EA Aguilar, 1S Barry*, 1M Chavez, 2,3A Chappie, 1R Ducote, 1A Johnson, 1L Ali, 1R Patalab, 2Poudel, 1TM Reske. LSU Health New Orleans, New Orleans, LA; 1Louisiana State University, Baton Rouge, LA; 2LSUNSH, LSU Health New Orleans, New Orleans, LA, US

Purpose of Study During the COVID-19 pandemic, the State of Louisiana implemented a quarantine to decrease the risk of infection. This situation led to a decrease in social interaction which is a risk factor for anxiety and depression, among the elderly population confined in residences. The objective was to determine whether being quarantined while living in a residential community would negatively affect the mental health of the elderly.

Methods Used A short longitudinal assessment and analysis to assess anxiety and depression. Data was initially collected, then at 6 weeks, and 12 weeks during the quarantine. We used the Geriatric Depression Scale (GDS) and Geriatric Anxiety Inventory (GAI) as these screening tools are designed for elderly population confined in residences. The objective was to examine whether there was a significant change in the mean depression and anxiety scores at 6 weeks, 12 weeks, and 12 weeks during the quarantine.

Conclusions Our data indicate a trend toward an increase in depressive symptoms (average 4.35 vs. 3.28, p-value = 0.045) at 6 weeks but did not reach statistical significance. However, anxiety scores decreased significantly from baseline to the follow-up at 6 weeks (average 3.28 vs. 2.38, p-value = 0.008). Anxiety scores continued to decrease at 12 weeks (average 2.38 vs. 1.98, p-value = 0.004) but did not reach statistical significance. The mean depression score at 12 weeks was significantly lower than the baseline (average 4.35 vs. 3.57, p-value = 0.038).

The findings suggest that the COVID-19 pandemic and subsequent quarantine may help mitigate the economic burden and cognitive decline in older adults.
the elderly, to assess the incidence and severity during the quarantine.

**Summary of Results** 57 residents of a Continuous Care Retirement Community (CCRC) in the New Orleans metropolitan area, stratified as nursing home residents, assisted living, and independent living of a 37 (80%) of the 46 patients were females, with a mean age of 86.1 (SD 9.1) years old; 25 (54.3%) were nursing home residents, 13 (28.3%) were in assisted living, and 8 (17.4%) were in an independent living community.

16 (34.8%) patients were diagnosed with depression before taking the survey, and five (10.9%) had previously diagnosed anxiety. Anxiety scores decreased significantly from baseline (average 4.35 vs. 3.28, p-value = 0.045) at 6 weeks but did not change from time 0 to week 12 or week 6 to week 12. Depression, scores did not change significantly between the time periods.

**Conclusions** Our data indicate a trend toward an increase in depression and anxiety during periods of pandemic quarantine isolation. Because the elderly are particularly susceptible to loneliness and resulting depression assessing these indicators may help mitigate the economic burden and cognitive decline resulting from the complications of depression and anxiety in the elderly population residing in community centers during periods of unanticipated extended quarantine isolation.

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**Abstracts**

### #66 DRESS SYNDROME WITH REACTIVATION OF EBSTEIN-BARR VIRUS IN PATIENT TAKING LAMOTRIGINE

**LF Castro*, J Garza, AL Bell, MA Elmasry, J Sekhon, J Lalmuanpuii. Texas Tech University Health Sciences Center, Lubbock, TX**

10.1136/jim-2022-SRMC.66

**Case Report** Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome is a cell-mediated hypersensitivity reaction involving CD4+ and CD8+ cells that produce tumor necrosis factor-alpha and interferon-gamma. It is often triggered by high-risk drug exposure that includes aromatic anticonvulsants, allopurinol, and sulfonamide-containing antibiotics. The disease presentation commonly includes systemic symptoms, hematologic abnormalities, diffuse maculopapular rash, and organ involvement. In this case report we will present a case of DRESS syndrome and EBV reactivation in a patient taking lamotrigine.

**Case** A 20-year-old female with a history of bipolar type 2 disorder was admitted for a diffuse maculopapular rash. Four weeks earlier, she had been prescribed lamotrigine and was instructed to titrate the dose by 50 mg every week until she reached 200 mg twice daily. The following day she started experiencing a rash on her right hand. During the following 72 hours, the rash spread to the rest of the body with associated fever (103.6°F), nausea, and vomiting. She was advised to go to the emergency center, where she was diagnosed with an allergic reaction and discharged with ondansetron and methylprednisolone dose-pack. Despite taking her medication, the fever and rash persisted over the following 2 days, and she also started having trouble producing urine despite adequate fluid intake. On readmission, the patient presented with a fever of 105.6°F and a maculopapular rash on greater than 80% of body surface area with areas of erythroderma but without oral mucosa or genital involvement. Dermatology started her on topical triamcinolone and hydrocortisone due to suspicion of DRESS syndrome and she was admitted for observation.

On day one of hospitalization, abdominal examination was remarkable for hepatosplenomegaly. Complete blood count (CBC) with differential was remarkable for leukocytosis of 14.96 k/mL and eosinophilia (1.08%). Complete metabolic panel was remarkable for transaminitis. A monospot test was positive for EBV. Patient was also oliguric despite having normal BUN and creatinine. Over the following days, the patient developed anemia, acute kidney injury, and transient thrombocytopenia. She was treated with pulse-dose steroids. At the time of discharge, the patient’s laboratory results normalized, and her urine output increased. She was discharged with a 10-week taper of corticosteroids, and she was doing well at her one-week outpatient appointment.

**Discussion** There is evidence that reactivation of latent herpesviridae infection is common in patients with DRESS syndrome. It is unclear whether the culprit drug can also cause reactivation of EBV or whether reactivation of EBV in a patient taking a high-risk drug can cause DRESS syndrome. More research is needed to elucidate the pathophysiology behind EBV reactivation in patients with DRESS syndrome.

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### #67 SUPERIOR SYNDROME, POOR PROGNOSIS

**RM Covicnt*, R Patel, JA Puckett, R Noor. The University of Mississippi Medical Center, Jackson, MS**

10.1136/jim-2022-SRMC.67

**Case Report** Superior vena cava (SVC) syndrome is a potentially life-threatening condition that results from compression or obstruction of the SVC. This can cause a variety of symptoms such as jugular venous distension, facial plethora, hoarseness, cough, neurologic symptoms, syncope, and swelling of the face, neck, or upper extremities. SVC syndrome is commonly due to a malignant mass and can potentially be a medical emergency depending on severity. We present an interesting case of SVC syndrome due to a newly diagnosed malignant mediastinal small cell carcinoma.

A 69-year-old African American male presented to the Emergency Department (ED) with complaints of neck swelling and shortness of breath over the previous week. He first noticed the swelling after waking up in the morning six days prior to presentation. He reports noticing his neck was more swollen on the right than left, non-painful, and had progressively increased in size over the week before arrival to the ED. He also reported a non-exertional shortness of breath that began around this same time. Other noted symptoms included significant hoarseness of his voice and an unintentional 12-pound weight loss over the previous month. Upon arrival in the ED, he was hemodynamically stable and breathing comfortably on room air. A chest x-ray in the ED showed widening of the mediastinum, and subsequent Computed Tomography (CT) imaging showed mediastinal lymmphadenopathy with significant narrowing of the SVC and right pulmonary artery. Interestingly, this patient had no facial or upper extremity swelling, no facial plethora, and a negative Pemberton’s sign on exam. Exam findings were significant for neck swelling and palpable, swollen anterior cervical and supraclavicular lymph nodes. Other lab work was significant for a mild acute kidney injury which improved with IV fluid resuscitation. Due to symptoms and imaging findings concerning...
for malignancy, the patient underwent endobronchial ultrasound bronchoscopy with transbronchial needle aspiration and biopsy of 4 right mediastinal lymph nodes with Interventional Pulmonology the next morning. He was also evaluated by Cardiotoracic Surgery during admission which recommended no urgent surgical intervention for SVC compression at the time. The patient was discharged with follow-up with oncology to discuss treatment options. Unfortunately, pathology from biopsy of the nodes later showed a new diagnosis of malignant, metastatic small cell carcinoma.

In summary, SVC syndrome is a potentially emergent and dangerous condition that presents in various ways. In this case, the clinical exam findings were consistent with mild to moderate SVC syndrome, since the patient was stable and no emergent vascular intervention was required. Although SVC syndrome is often thought of as an emergent condition, recent literature shows us that it can often be a relatively insidious, minimally symptomatic complication that still strongly raises suspicion for an underlying malignancy.

#68

**ESOPHAGOPLEURAL FISTULA IN THE SETTING OF PNEUMOTOSIS INTESTINALIS AND OROPHYRANGYELGE CARCINOMA**

G Dharmarpandi*, J Dharmarpandi, D Harper. Texas Tech University Health Sciences Center School of Medicine Amarillo, Amarillo, TX

10.1136/jim-2022-SRMC.68

**Case Report** A 64-year-old Caucasian male with chronic obstructive pulmonary disease (COPD), gastroesophageal reflux disease (GERD), and stage IV oropharyngeal cancer diagnosed within the past few months and G-tube placement two weeks prior presented with a one day history of abdominal pain, nausea, and coffee-ground emesis. He denied diarrhea, constipation, hematochezia, fever, and dyspnea. CT abdomen revealed pneumomediastinum and pneumomediastinal intestinalis. Vitals showed hypotension, hypothermia, tachypnea, and tachycardia. After 1 liter of crystalloid bolus was administered, repeat radiographic imaging revealed right-sided pneumothorax with effusion. A chest tube was placed and dark brown fluid containing amylase was drained.

Four hours after initial presentation, the patient underwent awake tracheostomy followed by exploratory laparotomy. Intraoperatively, a large air leak was noted through the chest tube with the initiation of mechanical ventilation. The following day, a re-exploratory laparotomy was conducted in addition to a bronchoscopy, which revealed no abnormalities despite continuous leakage through the tracheostomy tube. Four days later, an esophageagastroduodenoscopy was performed and an abnormality was found 35 cm from the teeth mark along the right lateral wall of the esophagus. Further examination revealed an esophagopleural fistula (EPF), confirmed with the administration of methylene blue through the defect and the return of the dye through the right thoracotomy tube.

An impediment in the diagnosis of EPF is the subtlety with which it can present in a patient with serious illnesses. The patient’s initial complaint of abdominal pain as a result of pneumomediastinum and pneumomediastinal intestinalis masked the diagnosis of EPF. In addition, the symptoms most commonly associated with EPF, such as cough, dyspnea, and regurgitation can be easily misdiagnosed as or easily explained by other diseases like COPD or GERD. The problem with reaching this diagnosis is further compounded by the inadequacy of imaging to visualize the defect, which can be small enough to evade radiological inspection but large enough to induce inflammation and infection of mediastinum resulting in sepsis, multigang dysfunction, and/or death. In this patient’s initial CT, the large pneumothorax with effusion obscured the pathologic connection between the esophagus and the pleura. EPF is primarily caused by thoracic esophageal perforation due to surgery, trauma, malignancy, or radiation. In this case, the cause is potentially due to G tube insertion, prior endoscopic instrumentation, and or oropharyngeal carcinoma causing erosive changes in adjacent tissue leading to fistula formation. Treatment of the esophagopleural fistula would involve surgical debriement of the affected portion of lung, irrigation of the pleural cavity, and closure of the pathological orifice, typically with through endoscopic placement of a stent or through the use of a over-the-scope-clip.

#69

**DIFFERENT KIND OF AURA: MIGRAINE PRESENTING AS TRANSIENT ISCHEMIC ATTACK**

G Dharmarpandi, Y Tawfeeq*, T Shihab, T Naguib. Texas Tech University Health Sciences Center School of Medicine Amarillo, Amarillo, TX

10.1136/jim-2022-SRMC.69

**Case Report** A 64-year-old male with transient ischemic attack, type 2 diabetes, dyslipidemia, symptomatic bradycardia with pacemaker placement, and migraine on aspirin/paracetamol/coffeeine presented with headache, aphasia, perioral numbness, and right hand and foot weakness for one hour. CT head was unremarkable. The patient had an NIH stroke scale of 11 and was administered tissue plasminogen activator. CT angiogram revealed 50% stenosis of the vertebral artery with hypoplasia noted on past imaging. Within 24 hours, his symptoms completely resolved. MRI was not done due to pacemaker. Upon investigation, the patient had a history of similar episodes five times in the past five years. Patient’s last admission presented as syncope and blurry vision prior to the onset of headache, left face numbness, and perioral tingling that all resolved spontaneously within 24 hours without administration of tissue plasminogen activator. Carotid doppler showed 40% stenosis of bilateral internal carotid arteries. Pacemaker interrogation revealed normal sinus rhythm with no paroxysms or episodes of atrial fibrillation. Family history is negative for migraines and positive for stroke leading to hemiplegia in grandfather. Due to a suspected cerebrovascular accident on antiplatelet therapy, he was advanced to dual antiplatelet therapy and he reported compliance. Additionally, it was thought that the patient’s right vertebral artery stenosis may have contributed to the patient’s symptoms and he was advised to avoid tilting his head and bending his neck to the right.

During the most recent visit, workup did not reveal any imaging evidence of stroke, significant vascular stenosis, arrhythmia, cardiac embolic source, patent foramen ovale, or significant risk factors for recurrent strokes on dual antiplatelet therapy. In addition, the patient’s history of five migraines with auras that include fully-reversible motor weakness and language symptoms that are not accounted for by another diagnosis make hemiplegic migraine the most likely diagnosis. The leading theory for hemiplegic migraines is spreading depression of neuronal and glial depolarization across the cerebral cortex, but may also involve alterations in cranial vascular beds. Venous air embolism is uncommon, potential life-threatening patient with evidence of cardiopulmonary compromise or end-organ dysfunction, and/or death. In this patient, the large pneumothorax with effusion obscured the pathologic connection between the esophagus and the pleura. EPF is primarily caused by thoracic esophageal perforation due to surgery, trauma, malignancy, or radiation. In this case, the cause is potentially due to G tube insertion, prior endoscopic instrumentation, and or oropharyngeal carcinoma causing erosive changes in adjacent tissue leading to fistula formation. Treatment of the esophagopleural fistula would involve surgical debriement of the affected portion of lung, irrigation of the pleural cavity, and closure of the pathological orifice, typically with through endoscopic placement of a stent or through the use of a over-the-scope-clip.
Abstracts

#70 AIR IN THE WRONG PLACE: A CASE OF PULMONARY ARTERY AIR EMBOLISM AFTER INTRAVENOUS CONTRAST INJECTION
S Duangkham*, A Cavaoza, U Sharmab, H Mezughib, K Nungi. Texas Tech University Health Sciences Center, Lubbock, TX

Case Report
Venous air embolism is an uncommon but potentially catastrophic event that occurs when air enters the systemic venous circulation and travels to the right ventricle and pulmonary circulation. Here we present a case of pulmonary artery air embolism after intravenous contrast injection.

A 59-year-old female patient with Marfan syndrome, complete heart block status post BiVentricular pacemaker, Protein S deficiency, history of pulmonary embolism, chronic combined systolic and diastolic heart failure, and nephrolithiasis with recent right-sided percutaneous nephrolithotomy who presents to ER with right flank pain. Patient was initially found to be hypotensive with mean arterial pressure of 48 and was found to be hypoxic at her arrival saturating 86% on room air. Computed tomography angiogram of chest, abdomen and pelvis showed no acute findings in the arterial system, no aortic dissection, prominent volume of air within the central pulmonary artery and right ventricle. Right perinephric hematoma with active extravasation. Patient was also found to be anemic. Hemodynamic status improved with blood transfusion, oxygen support and fluid resuscitation. Due to her stable hemodynamic status, and lack of symptoms, patient was treated with conservative management. Urology was consulted for further management regarding right perinephric hematoma. Patient continued to improve with no further complications.

Surgery, trauma, vascular interventions, and barotrauma from mechanical ventilation and diving are the most common causes of air embolism. Small amounts of air can be removed from pulmonary vascular bed by gas diffusion into the alveolar space. Air bubbles in the pulmonary microcirculation can cause endothelial damage, activation of complement and release of mediators from inflammatory cells resulting in non-cardiogenic pulmonary edema, bronchoconstriction, and hypoxemia. Clinical spectrum can range from no symptoms to cardiac arrest depending on the degree of severity of embolism, end-organs affected, and underlying comorbidities. Dyspnea is the most common symptom that may be accompanied by chest pain, dizziness. Air embolism should be suspected in patient who has sudden onset cardiopulmonary decompensation in the setting of a known risk factor. Diagnosis is made based on a high index of suspicion, exclusion of other life-threatening processes and best by demonstrating air in the intravascular space. Definitive therapy, including hyperbaric oxygen, manual removal of embolized air is indicated in patient with evidence of cardiopulmonary compromise or end-organ damage due to air embolism.

Venous air embolism is uncommon, potential life-threatening condition. There are no pathognomonic features of air embolism and many patients have no symptoms. Airway, breathing, circulation should first be assessed and maintained. Definitive therapy is indicated in patient with hemodynamically unstable. Ultimately, efforts should be made to prevent air embolism.

#71 SHOCK VALUE VT STORM IN MSSA BACTEREMIA
S Duangkham*, A Wichmann, U Sharma, M Abohelwa, K Nugent. Texas Tech University Health Sciences Center, Lubbock, TX

Case Report
Ventricular arrhythmias are common in patients with heart failure (HF). Ventricular tachycardia (VT) storm represents a life-threatening event refractory to ICDs. We present case of VT storm in a patient with heart failure with reduced ejection fraction (HFrEF).

A 57-year-old male with history of coronary artery disease status post 3 vessel bypass, ischemic cardiomyopathy, HFrEF status post single chamber ICD, paroxysmal atrial fibrillation, peripheral artery disease, hypertension, and type 2 diabetes mellitus presented to the hospital after his ICD fired multiple times. Device interrogation revealed appropriate shock times for likely atrial tachycardia-induced VT. Electrocardiogram on arrival showed atrial tachycardia with right bundle branch block. He was started on amiodarone and lidocaine drips and piperacillin-tazobactam for an incidental finding of superficial phlebitis. He continued to have several runs of VT with ICD discharges throughout the evening despite the drips, so the patient was intubated and sedated with fentanyl and propofol to decrease sympathetic drive. Patient was stable without further ventricular tachycardia and was extubated the next day. Blood cultures grew methicillin-susceptible Staphylococcus aureus (MSSA). Transesophageal echocardiogram showed echo-genic structure attached to the right ventricular lead, which was subsequently excised. He was discharged with wearable defibrillator and intravenous nafcillin with plans to reimplant the ICD after resolution of bacteremia.

In patients with an ICD, the most widely accepted definition of electrical storm is three or more appropriate therapies for ventricular tachyarrhythmias, including antigibcardia pacing, within 24 hours. Potential triggers can be new or worsened heart failure, changes in antiarrhythmic medication, context with other illness, psychological stress, diarrhea, and hypokalemia. In the hemodynamically stable patient, electrical storm is treated with IV anti-arrhythmics therapy. Our patient’s VT storm was likely caused by endocarditis and MSSA bacteremia and was refractory to initial therapies. While catheter ablation of ventricular tachyarrhythmias is an effective therapy in persistent storm, general anesthesia was chosen in this case due to its speed and availability as well as the severity of storm being experienced by an alert patient. Sympathetic activation has been implicated in pathogenesis of ventricular arrhythmias and evidence has shown that
Case Report
Hydralazine-induced anti-neutrophil cytoplasmic antibody (ANCA) associated vasculitis (HAAV) is a rare but rapidly progressive disease. HAAV is associated with renal involvement, antibodies to double-stranded DNA (dsDNA) and myeloperoxidase-ANCA (MPO-ANCA). Diagnosis is challenging due to nonspecific and variable symptoms. We report three cases of HAAV with diverse presentations.

CASE 1: 53-year-old African-American female with hypertension (HTN) on hydralazine for 5 years presented with dizziness and red-tinged urine. Lab tests revealed acute kidney injury (AKI), anemia, hematuria, nephrotic-range proteinuria, and elevated inflammatory markers. Glomerulonephritis workup revealed elevated antinuclear (ANA), antihistone, and MPO-ANCA antibodies. Renal biopsy revealed crescentic pauci-immune glomerulonephritis consistent with drug-induced vasculitis. Treatment included cessation of hydralazine, initiation of pulse steroids, hemodialysis, plasma exchange and immunosuppressive therapy. Patient’s was discharged after symptomatic improvement.

CASE 2: 59-year-old Filipino male with HTN on hydralazine for 10 years and chronic kidney disease (CKD) presented to the hospital with hematuria and symptomatic anemia. Urinalysis revealed hematuria and proteinuria. At the hospital, he developed new hemoptysis and diffuse purpuric rash. Immunological test was positive for MPO-ANCA. Kidney biopsy was consistent with ANCA glomerulonephritis. CT thorax revealed ground glass opacity and diffuse alveolar hemorrhage. Patient was admitted to the ICU and started on immunosuppressive therapy with plasmapheresis. He succumbed to a massive pulmonary hemorrhage.

CASE 3: 46-year-old African-American male presented with abdominal pain, fever, and dark urine. Home meds were hydrochlorothiazide, aldactone, and hydralazine. In the hospital, he developed progressive dyspnea and AKI. Positive labs included ANA, complement, PR3-ANCA and lupus anticoagulant, but negative for dsDNA and MPO-ANCA. Chest imaging showed bibasilar pleural effusion with atelectasis. Renal biopsy revealed pauci-immune diffuse necrotizing and crescentic glomerulonephritis, suggesting drug-induced etiology. He was treated with corticosteroids and immunosuppressive therapy with improvement. The patient continued to have good functional capacity with stable CKD Stage 3B disease over the next five years.

Discussion
We present three cases of HAAV with markedly diverse presentations, but the common findings of AKI with hematuria and/or proteinuria, pulmonary infiltrates, and elevated inflammatory markers, prompted for further immunological and renal biopsy workup. All labs, images, biopsy findings, and history of hydralazine use, hint at the diagnosis of HAAV. Hydralazine was discontinued for all patients, followed by corticosteroid and immunosuppressive therapy. Many recovered patients exhibit irreversible kidney damage.
hypertension developed hypernatremia, glycosuria, and acute kidney injury in the setting of COVID-19 pneumonia after resolution of diabetic ketoacidosis. The patient was initially admitted with a positive SARS-COV-19 screening, a creatinine of 1.1 mg/dL (0.5–1.2) with glycosuria, and sodium of 137 mmol/L (136–145). Seventeen days into his hospital admission for severe acute respiratory distress syndrome, he developed hypernatremia (147 mmol/L). Over the subsequent twenty-two days, the patient continued to have hypernatremia up to 153 mmol/L refractory to treatment. In addition, the patient had persistent glycosuria and an elevated creatinine of 2.3 mg/dL (greater than thirty percent above his baseline). His total fluid balance was +1444 mL during this phase of hospitalization. The patient’s electrolyte derangements concomitant with his worsening renal function suggests possible Fanconi syndrome. We hypothesize this is secondary to COVID-19.

Conclusion COVID-19 has been shown to be associated with renal dysfunction, including acute tubular injury, such as membranous nephropathy and Fanconi syndrome. Experimental data have suggested that COVID-19 can infect renal proximal tubular cells via the Angiotensin Converting Enzyme 2 with subsequent development of incomplete Fanconi syndrome preceding acute kidney injury. Studies have also shown that glycosuria, proteinuria, pyuria, and hematuria may occur with COVID-19 regardless of comorbidities. We concluded our patient developed refractory hypernatremia secondary to glycosuria induced incomplete Fanconi syndrome due to COVID-19.

#75 COMBINED CENTRAL RETINAL ARTERY AND VEIN OCCLUSION IN METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS SEPSIS – A CASE REPORT

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Case Community associated Methicillin Resistant Staphylococcus Aureus (CA-MRSA) has been increasing in incidence leading to challenges with treatment, complications and adding to the morbidity, mortality and healthcare costs. This case reports a rare complication of MRSA orbital cellulitis and sepsis resulting in unilateral blindness due to combined central retinal vein and artery occlusion (CCRVO).

Case Report A 51-year-old male with a history of intravenous drug use presented with a 4-day history of abscess over the right knee; swelling of the nose, upper lip, bilateral periorbital region with no visual loss; purulent nasal discharge and necrotizing fasciitis of right arm. Examination of both eyes revealed chemosis, conjunctival injection, edema and erythema. Extra ocular movements were limited–right more than left with an intact visual field. Fundoscopic exam was deferred at this time due to intense pain. CT scan demonstrated swelling of the face and periorbital region but no fractures or abscess. The patient had blood culture positive for MRSA and was started on Vancomycin. He underwent incision-drainage and debridement of the bilateral periorbital regions, upper lip, nose, right upper and lower extremity; lateral canthotomy and cantholysis. The patient developed septic shock requiring intubation and pressor support for a brief period of time. On day 3 of admission, the patient had a gastrointestinal bleed and was managed by placing 4 clips on the gastric ulcers. After extubation, a complete eye exam revealed perception of light with complete scotoma, relative afferent pupillary defect, pain on abduction in the right eye and an acuity of 20/60 with normal pupil and eye movements in the left eye. The intracocular pressure was 15 and 19 mmHg. Indirect ophthalmoscopy showed blurred margins with retinal whitening, attenuated arteries, cart wheel appearance, focal arterial sheathing, aneurysms, flame shaped hemorrhages, rotth spots and cherry red spot whereas the left eye showed mild A-V nicking and vein tortuosity, fundus exam findings are characteristic of CCRVO. Labs: increased platelet count with normal function consistent with reactive thrombocytosis. Hypercoagulability workup showed normal PT/PTT/INR and was negative for RF, ANA, Lupus, antiphospholipid, anti dsDNA, protein C and S, protein C resistance, factor V Leiden, antithrombin III, prothrombin mutation, hyperhomocysteinemia, and leukocyte alkaline phosphatase deficiency. Infectious panel was negative for RPR, HIV and hepatitis. Protein immunoelectrophoresis was normal. Bilateral carotid duplex was normal.

Conclusion CCRVO are seen with vasculitis and thromboembolic disorders, and it is rare in adults. In the absence of risk factors, the CCRVO can be attributed to MRSA sepsis-induced hypercoagulopathy. Early detection and treatment are essential to prevent debilitating long-term complications like blindness.

#76 FOLLOW-UP CHARACTERISTICS OF HOSPITALIZED COVID-19 PATIENTS: A SINGLE-CENTER RETROSPECTIVE CHART REVIEW

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Purpose of Study As of October of 2021, there have been over 43 million cases of COVID-19 and nearly 700,000 deaths in the U.S. alone. Many of those who have survived COVID-19 have been left with long-lasting symptoms such as fatigue, dyspnea, loss of smell or taste, and depression or anxiety. Mechanisms for these lasting symptoms are not fully known, so monitoring of patients after their infection has been cleared is important to determine both the rates and the mechanisms of the aptly named ‘Long COVID.’ The purpose of our study was to monitor the status of COVID-19 patients that were previously hospitalized at the UMC Medical Center in Lubbock, Texas after discharge.

Methods Used We conducted a comprehensive chart review of 128 patients that were hospitalized for COVID-19 at any time between April 1, 2020 and April 1, 2021, and reviewed follow-up data for these patients after discharge.

Summary of Results In our cohort of patients, 46% (n = 59) were men and 54% were women (n = 69) with an average age of 59.7 ± 14.8 years old. 60.9% of patients identified their race as Hispanic or of Latino origin (n = 78), with the next largest group being Caucasian at 22.6% (n = 29). The average number of days until post-hospitalization follow-up was 36 ± 38 days. Notable findings included a 50% rate of telehealth follow-up (n = 64), a 65.6% (n = 84) rate of diabetes, and a 73.4% (n = 94) rate of hypertension. 26.5% (n = 34) of patients reported respiratory symptoms at their follow-up appointments, 18.75% (n = 24) of patients reported constitutional symptoms, 9.37% (n = 12) of patients reported
A CURIOUS CASE OF DIARRHEA, ABDOMINAL PAIN, AND RECURRENT INTESTINAL INFECTION

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Case Report Enteropathy-associated T-cell lymphoma (EATL) is a rare and aggressive type of non-Hodgkin lymphoma that affects the small intestine. Its median age at diagnosis is 60 years old. It is strongly associated with Celiac Disease (CD). However, without previously known history of CD, diagnosis is usually delayed. Here, we present a case of a 57-year-old healthy man with acute onset of abdominal pain and diarrhea, found to have recurrent Clostridium difficile colitis. His symptoms initially improved with treatment of colitis, however, recurred. He eventually developed enteroenteric fistula requiring resection and EATL was diagnosed on pathology. Prompt diagnosis and treatment of EATL with multidrug chemotherapy is crucial to achieve optimal outcome.

NORMOLIPEMIC XANTHELASMAS PALPEBRUM IN A CASE OF ACUTE LIMB ISCHEMIA

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Case Report To discuss a case of acute limb ischemia in a patient with xanthelasmas and normal lipid panel

Methods Used Literature Review and Case Report

Summary of Results 43-year-old Caucasian male with 20 pack year history of tobacco use presented to with left leg pain associated with numbness, swelling, and poikilothermia. He had no history of obesity, diabetes, hypertension, coronary artery disease, or thyroid disease. He denied medications or supplements usage but had poor diet and limited physical activity. He reported prevalent heart disease in his family but was unable to be more specific. He had a six-month history of cholelithiasis and underwent emergent cholecystectomy one month prior.

On physical exam of the patient there were noticeable xanthelasmas to both eyelids, which patient he stated first appeared three years ago. Fasting lipid panel was within normal range (cholesterol 162, triglyceride 120, HDL 41, LDL 97).

CT angiogram of the leg showed a complete occlusion of the left external iliac artery and patient was taken in by vascular surgery for thrombectomy, stent placement, and fasciotomy. His hospital course was complicated by partial occlusion of the stent, requiring repeat angioplasty. Repeat lipid panels were obtained four days after initial testing to rule out possible lab error and patient’s results were largely unchanged. Apolipoprotein B was also collected and yielded a result of 90 mg/dL (normal levels in adults are less than 100 mg/dL). Patient continuously improved during the 6 days he was in the hospital and was cleared for discharge home on clopidogrel and rivaroxaban with wound care and rehabilitation services.

Conclusions The presence of xanthelasmas palpebrum, recent cholelithiasis, acute limb ischemia, and significant family history suggest underlying dyslipidemia, which is not reflected in laboratory results. Apolipoprotein B, which has a strong correlation with atherosclerotic disease, was also collected and yielded results below the threshold for concern. The patient was not taking any medications, including statins, which would have suppressed lipid values. However, a documented side effect of cholecystectomy is the lowering of lipid levels, which is possible in this patient. Notably, normolipemic xanthelasmas palpebrum is not an uncommon phenomenon. Studies have found that patients with xanthelasmas are at higher risk of atherosclerosis independent of lipid concentrations. While lipid levels were within normal range, patients with visible xanthelasmas had an increased intima-media thickness of the carotid compared to patients without xanthelasmas. Our patient stated that his eyelid lesions had been present for three years, and this was likely a harbinger of his proclivity for atherosclerotic disease which resulted in his eventual limb ischemia. This vignette describes an unusual case of a patient who presented with a strong clinical picture of dyslipidemia yet had normal lipid panels on laboratory testing.

A PRESENTATION OF PROFOUND (8200 ML) URINARY RETENTION

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Case Report Acute urinary retention (AUR) often presents in men as the inability to urinate coupled with acute lower abdominal/suprapubic pain. AUR in men is most commonly due to outflow obstruction secondary to BPH, but other etiologies including neurologic dysfunction, medication adverse effects, and infection can also be attributed to this. In the case of chronic urinary retention (CUR), however, patients often present without any pain symptoms. Here, we describe the presentation of painless urinary retention of a significant volume.
Case A 60-year-old man with past medical history of hypertension and an abdominal lipoma presented with a 1.5-month history of nausea, vomiting, and fatigue associated with oral intake intolerance and a reported 10-lb weight loss. The patient had no abdominal pain or any urinary complaints including no decreased urination or reported incontinence. Upon presentation, he was afibrile and hemodynamically stable. His exam was very concerning for a firm, non-tender, and grossly distended abdomen with protuberance that stretched from his xiphoid process to his pubic symphysis. Review of his medical record showed CT imaging of his abdomen/pelvis from four years prior notable for moderate left hydrenephrosis/hydronephrosis secondary to a distended urinary bladder and markedly enlarged prostate causing bladder outlet obstruction. Initial bloodwork was notable for elevated renal indices (BUN 136 mg/dL and creatinine 10.3 mg/dL); his urine studies did not show evidence for infection. CT imaging performed this presentation was concerning for a large intraabdominal mass (measuring approximately 31 cm in diameter) with bilateral hydrenephrosis and hydronephrosis. A Foley was placed and initially 1L of urine was drained before the Foley was clamped. Urology was consulted and cleared the patient for complete bladder emptying: in total, 8.2 liters of urine was drained. He was discharged approximately one week thereafter following resolution of his post-obstructive diuresis with improvement in his post-renal acute kidney injury due to his obstructive uropathy. A Foley was left in place upon discharge for close outpatient follow-up with Urology.

Conclusions The presence of AHDs is associated with sociodemographic factors, as well as higher frailty levels. Much of the focus on improving advance care planning has been on increasing AHDs. Prevalence of AHDs among inpatients has increased over the past decade but remains modest. Clinicians have a responsibility to promote AHDs to ensure patients’ own goals of care are documented and respected.

### Abstracts

#### #80 PREVALENCE AND FACTORS ASSOCIATED WITH ADVANCE HEALTH DIRECTIVES IN FRAIL OLDER INPATIENTS

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Purpose of Study Advance health directives (AHDs) can be used to explore and document patient preferences for treatment and are therefore an important aspect of care planning. In this study, we aimed to investigate the prevalence and associations of AHDs in a large cohort of older inpatients over a decade of evolving advance care planning strategies.

Methods Used This retrospective study included 6449 patients, aged ≥ 65 years referred for specialist geriatric consultation between 2007 and 2018 across 27 centres in Queensland, Australia. Sociodemographic and health data were analysed from the Comprehensive electronic Geriatric Assessment online database. The interRAI-Acute Care Comprehensive Geriatric Assessment tool was used to calculate a frailty index (FI), based on the model of accumulated deficits.

Summary of Results Patients’ mean (SD) age was 80.7 (7.7) years, 3489 (54.1%) were female and mean (SD) FI was 0.46 (0.15). An AHD was present in 1032 (16.0%) patients. Prevalence of AHD increased over time, from 7.6% in 2008 to 35.4% in 2017. In logistic regression models, higher frailty (OR:1.34 [1.27–1.40]), older age (OR:1.04 [1.03–1.05]), living in an institution (OR:1.33 [1.01–1.73]), and recent hospitalisation (OR:1.42 [1.23–1.62]) were significantly associated with higher prevalence of AHDs.

#### #81 PENILE CALCIPHYLAXIS


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Case Report Calciphylaxis, or calcific uremic arteriolopathy, is a rare skin disorder that presents as intensely painful areas of skin ischemia and necrosis and carries a high morbidity and mortality rate. The skin lesions of calciphylaxis normally involve adipose-rich areas such as abdomen and thighs, though in much rarer cases have involved the penis. Calciphylaxis is most commonly associated with end-stage renal disease (ESRD). Other associated risk factors include hyperphosphatemia, hypercoagulable states, long-term dialysis use, and warfarin use.

Case A 50-year-old man with past medical history of ESRD on HD and mechanical mitral valve replacement on warfarin presented with one month of progressive penile pain and swelling, which worsened to an ulcerated lesion at the glans penis and phimosis. CT scan of the pelvis demonstrated marked diffuse atherosclerotic disease with wall calcification of all major vessels, as well as questionable mild soft tissue edema and skin thickening of the penis. Infectious workup was negative for chlamydia/gonorrhea, HIV, HSV, and syphilis. The patient was evaluated by urology and taken to the operating room for circumcision and penile biopsy given concern for malignancy. Frozen section for cancer was negative. Final surgical pathology results revealed necrotic ulcer with thrombosis and intravascular calcification at the ulcer base. Dermatology reviewed the biopsy findings and felt this was most consistent with calciphylaxis. The treatment plan was coordinated with nephrology to begin sodium thiosulfate with dialysis. The patient continued to complain of intense pain despite scheduled and prn oral and IV pain medications. Palliative care and wound care were consulted for symptom management. The patient was offered penectomy given refractory pain despite medication adjustment, however he declined. And although it is recommended to discontinue warfarin in the setting of calciphylaxis as it can worsen skin necrosis, the decision was made to continue warfarin given presence of his mechanical valve and otherwise limited options due to ESRD.

Discussion Penile calciphylaxis is particularly rare because of the rich vascular network in the area. Microvascular calcification leads to a cascade of vascular endothelial injury and consequent narrowing and thrombosis of the vessels, which ultimately leads to tissue necrosis from reduced blood flow. There is no approved treatment for calciphylaxis. A collaborative approach involving nephrology, dermatology, wound care, and palliative care is necessary to try and reduce risk factors.
Case Report

Purpose of Study Interstitial lung disease (ILD) is a group of pulmonary disorders that cause varying degrees of inflammation and fibrosis of pulmonary architecture. The diagnosis requires good clinical history, examination, appropriate workup, and a high degree of suspicion. This case report draws attention toward a unique case of cryptogenic organizing pneumonia after mold exposure.

Methods Used Not applicable.

Summary of Results A 36-year-old nonsmoker male with no comorbidities presented with worsening shortness of breath after cleaning a walk-in cooler room contaminated with mold. He was seen at multiple facilities for presumed diagnosis of COVID-19 despite being vaccinated and 4 negative COVID-19 results. He was discharged with 2 liters of supplemental home oxygen and a 7-day course of Levofloxacin, with no resolution of symptoms. The patient presented to our hospital 2 months after initial onset of symptoms. On examination, the patient had bronchial breath sounds with fine crepitations, egophony, and increased vocal resonance. Chest x-ray revealed bilateral airspace consolidation with scattered ground-glass opacities in the apices. Computed Tomography (CT) of the thorax showed peripheral upper lobe ground-glass opacities with interstitial thickening in a ‘crazy-paving’ pattern. A chest CT angiogram showed patchy ground-glass pulmonary infiltrates with peripheral predominance consistent with severe COVID pneumonia. PCR for SARS-CoV-2 was negative. The patient’s oxygen demand increased progressively from 4L on nasal cannula to 40L on high flow nasal cannula to maintain an oxygen saturation of 90%. Labs showed normal leukocyte count, ESR, ALT, and AST with a mildly elevated CRP.

Workup for infectious etiology was negative for S. pneumoniae, legionella, coccidioides, HIV, hepatitis panel, QuantiFERON gold and blood culture. Autoimmune workup was negative for ANA, RF, CCP, ANCA, anti-centromere Antibody, anti-ds DNA. The patient underwent a bronchoalveolar lavage with culture negative for acid fast bacilli, fungi, and P. jirovecii. Bronchoscopic biopsy was subsequently performed and revealed lung parenchyma with foci of mild chronic inflammation with focal fibroblastic proliferation and fibrosis, suggestive of an organizing pneumonia. The patient was started on steroids 1 mg/kg resulting in significant clinical improvement requiring only 3L on nasal cannula on day 5 of treatment. He was then discharged with high dose steroid therapy for 3 months.

Conclusions The prognosis and treatment of ILD depends on accurate diagnosis and its subtype. Hence appropriate workup is essential to guide therapy. In the setting of the current pandemic, relatively uncommon causes of ILD like cryptogenic organizing pneumonia may go undiagnosed due to the unconscious bias among health care providers resulting in delayed treatment. This report highlights the importance of considering alternative diagnosis when a disease does not follow an expected course.

## Case Report

### #82 Cryptogenic Organizing Pneumonia During the COVID-19 Pandemic: A Missed Diagnosis

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### Case Report

**Purpose of Study** Interstitial lung disease (ILD) is a group of pulmonary disorders that cause varying degrees of inflammation and fibrosis of pulmonary architecture. The diagnosis requires good clinical history, examination, appropriate workup, and a high degree of suspicion. This case report draws attention toward a unique case of cryptogenic organizing pneumonia after mold exposure.

**Methods Used** Not applicable.

**Summary of Results** A 36-year-old nonsmoker male with no comorbidities presented with worsening shortness of breath after cleaning a walk-in cooler room contaminated with mold. He was seen at multiple facilities for presumed diagnosis of COVID-19 despite being vaccinated and 4 negative COVID-19 results. He was discharged with 2 liters of supplemental home oxygen and a 7-day course of Levofloxacin, with no resolution of symptoms. The patient presented to our hospital 2 months after initial onset of symptoms. On examination, the patient had bronchial breath sounds with fine crepitations, egophony, and increased vocal resonance. Chest x-ray revealed bilateral airspace consolidation with scattered ground-glass opacities in the apices. Computed Tomography (CT) of the thorax showed peripheral upper lobe ground-glass opacities with interstitial thickening in a ‘crazy-paving’ pattern. A chest CT angiogram showed patchy ground-glass pulmonary infiltrates with peripheral predominance consistent with severe COVID pneumonia. PCR for SARS-CoV-2 was negative. The patient’s oxygen demand increased progressively from 4L on nasal cannula to 40L on high flow nasal cannula to maintain an oxygen saturation of 90%. Labs showed normal leukocyte count, ESR, ALT, and AST with a mildly elevated CRP.

Workup for infectious etiology was negative for S. pneumoniae, legionella, coccidioides, HIV, hepatitis panel, QuantiFERON gold and blood culture. Autoimmune workup was negative for ANA, RF, CCP, ANCA, anti-centromere Antibody, anti-ds DNA. The patient underwent a bronchoalveolar lavage with culture negative for acid fast bacilli, fungi, and P. jirovecii. Bronchoscopic biopsy was subsequently performed and revealed lung parenchyma with foci of mild chronic inflammation with focal fibroblastic proliferation and fibrosis, suggestive of an organizing pneumonia. The patient was started on steroids 1 mg/kg resulting in significant clinical improvement requiring only 3L on nasal cannula on day 5 of treatment. He was then discharged with high dose steroid therapy for 3 months.

**Conclusions** The prognosis and treatment of ILD depends on accurate diagnosis and its subtype. Hence appropriate workup is essential to guide therapy. In the setting of the current pandemic, relatively uncommon causes of ILD like cryptogenic organizing pneumonia may go undiagnosed due to the unconscious bias among health care providers resulting in delayed treatment. This report highlights the importance of considering alternative diagnosis when a disease does not follow an expected course.
#84 HYPERTENSIVE EMERGENCY REVEALS THE DIAGNOSIS OF CARDIAC AMYLOIDOSIS

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Purpose of Study Coronary artery disease (C.A.D.) is one of the highest causes of death in the world. The purpose of this report is to demonstrate a lower incidence of C.A.D. (20–30%) in Puerto Rico (P.R.) (U.S.A. Island) compared with the mainland, U.S.A.

Methods Used The study of population was 1000 consecutive Puerto Rican patients and the U.S.A. health statistics reported by the Department of Health and the U.S.A. Department of Health. They were compared statistically, and a significant difference was found. Investigators in PR. has reported the genetic admixture of the Puerto Rican population (CYP C9, VXORC1, VKORC1-1639>G a Allele in sector 1), which we call ‘protective genes’.

Summary of Results A report showed a genetic admixture of 3 genes which we named protective against severe-aggressive C.A.D. in the P.R. population when compared with the U.S.A. population. This admixture has a diffuse distribution in our population, reducing the inflammatory effect of several factors. These are statistics of the most of European population. C.A. D. is an inflammatory process of the coronaries which includes the endothelial cells, monocytes and macrophages. This inflammation is induced by angiotensin II, oxidize LDL monocyte-macrophage axis, inducing plaque formation, especially in the coronaries.

Conclusions Probably, this gene admixture protects these cells against an aggressive inflammatory process, which will reduce the expression of C.A.D. Again, cultures ethnicity and evolution are all important part in this reduction of C.A.D. in our population. We will compare our data with the U.S.A. and European data.

#85 HISPANICS PUERTO RICO (U.S.A. ISLAND) WITH A HIGHER LDL LIPOPROTEIN LEVELS SHOWS A LOWER PERCENT OF CORONARY ARTERY DISEASE THAN THE U.S.A

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Purpose of Study Coronavirus disease, caused by a beta-coronavirus, mostly affects the respiratory system. Since it is a novel disease, very little is known about the connection between heart involvement and COVID-19. This study will strengthen the current literature and demonstrate to what extent the coronavirus affects the cardiac system. This is a leap forward towards understanding how the heart responds to the virus; based on a cross sectional study of a Hispanic population.

Methods Used In total, 50 patient records with positive PCR for SARS-CoV-2 were collected from the Heart Center Hospital. These 50 patients (P) were admitted after coming into the emergency room. We studied age, sex, race, cardiac involvement, medications, EKGs, Chest Plates, X-rays, CT-Scans, and previous and current health problems. Within the medication
section, our prime focus was to observe whether these P were currently taking or took Losartan in the past, because this drug reduces the penetration intracellularly of the virus. For the chronically ill P, we analyzed underlying diseases, intubation and their role in complications or even death.

Summary of Results All of the 50 P were from Puerto Rico (P R), a Hispanic population. None of the P was taking Losartan. According to the records 96% had severe health problems previously to being contaminated by the virus. Some had atherosclerosis, while others had cardiomyopathy or diabetes mellitus, not related to an acute viral infection. Ten percent of these P died; however, their cause of death was not a result of a clear correlation between COVID-19 and other comorbidities. These P were chronically ill and probably the virus further complicated their medical condition.

Conclusions In P R, and possibly other Hispanic countries, there are genes which we call "protective genes" (E G) that control the incidence and degree of heart disease, especially atherosclerotic heart transmitted by evolution. We believe E G are crucial in reducing the risk of contracting severe complications by the COVID-19 virus. In addition, since none of the 50 P was not taking Losartan, we also think this is a factor that will increase the incidence of getting the virus intracellularly, increasing the incidence of death.

Conclusions The American Diabetes Association (ADA) states that a comprehensive foot examination should be conducted annually to assess skin, neurologic, vascular, and biomechanical status, but foot examinations are documented in only 6% to 12% of HMO/private practice settings. Although the incidence of diabetes is increasing globally, diabetes and diabetic foot care play an especially large role in the healthcare management of patients in patients living in Latin American countries, where the frequency of diabetes is expected to increase by 38% over the next 10 years. A specific barrier to proper preventative management in these countries includes lower rates of diabetic foot examinations at primary care visits due to a dearth of Spanish-language forms to evaluate the prevalence and progression risk of foot pathologies commonly seen in patients with diabetes. This study implemented a Spanish-language evaluation form to record the results of physical examinations and estimate the risk of progression to more severe diabetic foot disease. This evaluation can be adopted in healthcare settings looking to improve screening efficiency and preventative care quality for their Spanish-speaking patients with diabetes.

#87 ESTIMATING RISK OF DIABETIC FOOT DISEASE PROGRESSION AMONG SPANISH-SPEAKING PATIENTS

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Purpose of Study This study aims to implement a Spanish-language foot evaluation for assessing the prevalence of foot pathology among the Hogar Carlos María Ulloa’s (HCMU) patient population with type II diabetes mellitus and identify each patient’s risk of developing serious foot complications.

Methods Used A Spanish-language evaluation form was developed to obtain demographic factors, assess the prevalence of diabetic foot disease, and estimate the risk of developing severe foot disease amongst all diabetic patients at HCMU, a state-sponsored nursing home in San Jose, Costa Rica. Foot evaluations were completed by the first author and three licensed HCMU physical therapists. Statistical Analysis Software (SAS) was used to assess the prevalence of foot disease among diabetic patients and estimate the risk of progression to severe foot disease, including foot ulcers and amputation.

Summary of Results Of the 43 patients with type II diabetes mellitus assessed, 61.9% of patients experienced a diminished posterior tibial pulse, while pulse was absent in 16.67% of patients. 66.67% of patients presented with claw or hammer toe deformities, 54.76% experienced hallux valgus deformity, and 30.95% presented with pes cavus or pes equinus deformities. Strikingly, over half 54.76% of patients had developed peripheral neuropathy within their feet. Of the patients examined, 64.29% of patients had a moderate risk of progressing to more severe diabetic foot disease, including ulcers requiring amputation. Two of the patients examined had already developed diabetic foot ulcers, and an additional two patients had already undergone single-foot amputations. On average, the evaluation form took two minutes and fifty-three seconds to administer.

#88 DIAGNOSIS AND ROBOTIC-ASSISTED, MINIMALLY INVASIVE, AUTOLOGOUS PERICARDIAL PATCH REPAIR OF A SINUS VENOSUS ATRIAL SEPTAL DEFECT (ASD) WITH REPAIR OF PARTIAL ANOMALOUS PULMONARY VENOUS CONNECTION

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Case Report Sinus venosus ASDs are usually associated with one or more anomalous right sided pulmonary veins. Diagnosis by transthoracic echocardiogram (TTE) and confirmation with transesophageal echocardiogram (TEE) and right heart catheterization can lead to a multidisciplinary approach for appropriate surgical correction.

Case A 21-year-old male with no PMH presented to clinic for a routine physical to return to collegiate athletics post COVID-19 infection. His only complaint during this time was residual dyspnea (NYHA Class 1). An ECG was obtained and showed an incomplete right bundle branch block and TTE revealed an ASD with moderate RV dilatation. Repeat TTE at our institution showed an intratral shunt on injection of agitated saline via the right arm within three beats after injection. Subsequent right heart catheterization with shunt series revealed a step in oxygen saturation from 75% in the superior vena cava (SVC) to 88% in the right atrium. Additional imaging obtained with TEE confirmed a sinus venosus ASD. Cardiogenic stroke was engaged and further imaging with computed tomography angiography (CTA) of the chest confirmed a large superior sinus venosus ASD measuring 16 mm in diameter as well as partial anomalous right pulmonary venous drainage into the SVC.

The heart team decided on a minimally invasive robotic approach and performed an autologous pericardial patch repair of the ASD with redirection of the right and superior pulmonary veins into the left atrium. Intra-op TEE showed no residual shunt across the interatrial septum. The patient had an uncomplicated post-operative course and was discharged home on day 4.
Abstract 

Decision-Making Sinus venous ASDs and associated anomalous pulmonary veins are often missed on TTE. In our patient, TEE and CTA assisted in the detection of anomalous pulmonary venous connection. A multidisciplinary heart team approach helped determine and tailor the best option for surgical correction in our patient’s case.

Conclusion Sinus venous defects account for up to 10% of ASDs and can lead to pulmonary hypertension if left untreated. TTE remains the first imaging modality in assessing for ASDs, but TEE, RHC, and CTA can assist in comprehensive diagnosis and planning for procedural correction. Surgical closure in patients less than 25 years old without pulmonary hypertension is associated with low postoperative mortality, and a multidisciplinary approach can help ensure the most optimal method of surgical correction.

Abstract #88 Figure 1 A) Transesophageal echocardiogram with red arrow depiction superior sinus venous atrial septal defect. Color doppler shows ASD with left to right shunt. LA (left atrium), RA (right atrium); B) Transesophageal echocardiogram with blue arrow showing anomalous right pulmonary vein with drainage into the superior vena cava. Red dotted line and arrow depict atrial septal defect measuring 16 mm in diameter. LA (left atrium), SVC (superior vena cava)

Abstract #89 ARE DIRECT ORAL ANTICOAGULANTS GOING TO REPLACE THE RAT POISON?

Purpose of Study This abstract aims to discuss the current guidelines and trials shaping the evolving landscape of direct oral anticoagulant (DOAC) and vitamin-K antagonist use for various cardiovascular diseases and patient groups.

Methods Used We conducted a Medline search of ‘direct oral anticoagulants,’ ‘vitamin K antagonists,’ ‘left ventricular thrombus,’ ‘atrial fibrillation,’ and ‘prosthetic heart valves’ to identify landmark trials published before June 22, 2021, for inclusion in this review. Trial bibliographies, important practice guidelines, and relevant reviews were examined to ensure the inclusion of relevant trials. The following section discusses the trials and emerging evidence for the use of either DOACs or VKAs in different patient groups requiring anticoagulation for cardiovascular disease.

Summary of Results DOAC use has grown dramatically in recent years. Large, multicenter randomized controlled trials have affirmed the superiority of DOACs over VKAs for patients with nonvalvular atrial fibrillation (AF) and venous thromboembolism (VTE) when body-mass-index (BMI) and heptorenal function are relatively normal. In patients with BMI extremes, renal or hepatic dysfunction, guidelines are driven by expert opinion, retrospective data, and small randomized trials, and thus, the efficacy and safety of DOACs in these patients are less clear. VKA therapy is the standard of care for patients with mechanical prosthetic valves and left ventricular (LV) thrombi, however, further investigation of DOAC therapy in patients with LV thrombi is under way. In patients with a bioprothetic mitral valve and comorbid AF, the RIVER trial demonstrated that rivaroxaban was non-inferior to warfarin in preventing VTE.

Conclusions While VKAs have traditionally reigned as the oral anticoagulant of choice for over half a century for many cardiovascular diseases, DOACs have been recently shown to possess a non-inferior antithrombotic benefit in addition to a reduced bleeding profile as compared to VKAs for patients with nonvalvular AF and VTE. However, these studies do not address the ideal anticoagulation strategy for underrepresented populations such as those with hepatic or renal impairment. Randomized controlled trials are needed to investigate these specific populations. Although recommendations for left ventricular thrombus treatment have traditionally supported VKAs, the first randomized controlled trial to compare VKAs with DOACs in patients with LV thrombi has revealed promising results in favor of DOACs. Lastly, whilst VKAs remain the preferred anticoagulants in patients with mechanical prosthetic valves, the RIVER trial has revealed the role of DOACs in treating patients with a bioprothetic valve and concomitant atrial fibrillation. We anticipate that more trials will address this issue, and DOACs may eventually be all affordable, and perhaps replace VKAs or the rat poison, as a non-inferior alternative while avoiding its side effects and the need for periodic INR checks.

Abstract #90 SYNTHETIC CANNABINOIDS AS A CAUSE OF CORONARY VASOSPASM MIMICKING MYOCARDIAL INFARCTION

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Case Report Marijuana has long since been popular as an illicit substance in the United States & the rest of the world. MI is a particularly lethal sequel of marijuana use. We present a case of diffuse coronary vasospasm secondary to marijuana, mimicking myocardial infarction.

Case presentation 53-year-old male with a past medical history of hypertension, hyperlipidemia, and COPD woke up at 3 AM with severe shortness of breath unresponsive to albuterol inhalers. Three hours later, the patient reported severe chest pain and was found pulseless. EMS was called and reported the patient to be in ventricular fibrillation. CPR was initiated, and the patient was intubated. The patient was shocked a total of 5 times, 4 rounds of epinephrine and one round of amiodarone. Return of spontaneous circulation was achieved after 30 minutes. Labs were significant for creatinine 1.5 mg/dl, HCO3 13 mmol/L, and lactic acidosis with pH 7.04. Troponins and BNP were within the normal range. EKG showed no dynamic ST-segment changes on admission. Urine drug screen was positive for marijuana. Left Heart cath. showed severe spasms involving all 3 coronary vessels responsive to intracoronary nitroglycerin, but otherwise no significant obstructive coronary disease. Six hours after LHC, the patient was found to have ST elevation in leads V3-V6 & wide QRS complexes.
rhythm lasting for 20 minutes along with hypotension. At this point, the patient was intubated with good oxygen saturation and stable electrolytes. He was not on pressor support. EKG changes resolved with increasing the rate of nitroglycerin drip & hypotension responded to IV fluids. Troponin HS drawn at the time was found to be elevated at 197ng/L. Repeat LHC was not deemed necessary, but the patient was switched to diltiazem from carvedilol. However, there were no further notable events. The patient was discharged 8 days later & counseled to quit marijuana.

Discussion: Marijuana is one of the most widely abused substances in the US. When smoked, THC results in a rapid, dose-dependent tachycardia by 20–100%, an increase in blood pressure, and an increase in cardiac output by > 30%. MI is a rare complication from marijuana use. Our patient was unusual in that his MI symptoms were due to global vasospasm of the coronary arteries, which we theorize was contributed to by marijuana toxicity. It is important to note that hundreds of chemical variants are likely in circulation relative to the few that clinicians are capable of testing for. The workup is identical to the workup for any patient suspected of ACS. The diagnosis of substance-induced angina is a diagnosis of exclusion, with the particular substance identified through careful patient history, UDS, and the clinician’s awareness of current commonly abused substances.

Conclusion: In patients with low risk for cardiovascular events, particularly pediatric and young adult patients, presenting with symptoms of MI, substance-induced MI should be suspected.

**Abstract #91**

**DESCRIPTION OF DEXMEDETOMIDINE DOSING IN NEONATES AND ITS IMPACT ON CARDIOVASCULAR SYSTEM**

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**Purpose of Study**

Dexmedetomidine (DEX) is gaining popularity as an off-label sedative and anxiolytic for neonates. DEX does not cause gastrointestinal or respiratory effects, however does have bradycardic and hypotensive effects. There is no evidence of cardiovascular patterns associated with these side effects. Currently, there is no evidence-based practice recommendation regarding DEX dosage in neonates. The objective of the study is to retrospectively evaluate the cardiovascular effects of DEX infusion in neonates admitted to the NICU.

**Methods Used**

Retrospective study of NICU patients with an order for DEX infusion between Jan 2016 and Dec 2020. MBP-mean blood pressure, DBP-diastolic blood pressure and SBP-systolic blood pressure, vasoactive inotrope core, were collected at baseline, pre-DEX infusion and at 1 – 4-hour intervals in the first 24 hours after starting DEX. Total sample is 228; at the time of abstract submission, we completed 60% of data input. Data was recorded into REDCap™ and descriptive statistics were calculated using SAS 9.4. Baseline data was compared to post DEX infusion at 1–4 hour intervals in the first 24 hours and the patients were divided into GA groups.

**Summary of Results**

160 neonates had a mean GA of 33 weeks (SD 5.7) at DEX initiation. All age groups had a decreased heart rate 12 hrs after DEX initiation and the largest mean reduction in heart rate (12%) in the 28–32 wks GA group. Changes in BP were largest for newborns <28 wks at 9–12 hrs with a 13.7% decrease in mean DBP, 12.4% decrease in MBP and 11.4% decrease in mean SBP associated with a mean DEX dose of 0.4 mcg/kg/hr. In the 28–32 wks GA age group, largest decrease in BP was at 3–4 hour interval with 10.7% decrease in mean DBP, 8.9% decrease in MBP and 4.6% decrease in mean SBP associated with a mean DEX dose of 0.5 mcg/kg/hr.

**Conclusions**

Bradycardia was noted at intervals corresponding to the half-life associated with GA. There was more hypotension in preterm infants <28 weeks GA. Newborns less than 28 weeks had the largest decrease in BP associated with a mean DEX dose of 0.4 mcg/kg/hr. Additional studies are needed in this population to better assess clinical significance of such hemodynamic changes.

**Abstract #92**

**CARDIOVASCULAR SEQUELAE OF PSYCHIATRIC DISORDERS**

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**Purpose of Study**

To review the current literature on the effect of psychiatric disorders on the cardiovascular system, recognize the damaging impact of psychological stress and disorders on the physical health, and adopt screening and intervention modalities to decrease the treatment cost.

**Methods Used**

This is a review on the effect of psychiatric disorders on the cardiovascular system. Psychiatric conditions such as depression, anxiety, bipolar disorder, schizophrenia, stress, type A and D personality disorders, and obsessive-compulsive disorder are presented.

**Summary of Results**

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide. Many psychiatric conditions pose an independent risk factor in development of coronary artery disease and can lead to
Abstracts

Deterioral cardiovascular outcomes. Etiology of CVD is multifactorial, including genetic, biological, and environmental factors. Many of these mental health disorders result in dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system, thus contributing to hypertension, left ventricular hypertrophy, coronary vascular constriction, endothelial and platelet dysfunction, and production of pro-inflammatory cytokines.

Major depressive disorder, bipolar disorder, and schizophrenia are associated with a 2–3 fold increased mortality rate and poor prognosis especially from CVD. Mortality rate ratio secondary to CVD can be as high as 8-fold in bipolar patients less than 40 years. Surprisingly, treatment with lithium in bipolar patients blunts the CVD risk in comparison to the second-generation antipsychotic medications which increase the risk of CVD. Initial presentation of CVD in schizophrenic patients can manifest as sudden cardiac death due to undetected myocardial infarction, as indicated by Q waves on the electrocardiogram.

People with hostility (a peculiar trait of type A behavior pattern) and type D personality disorder experience stress-related adverse effects and have an increased risk of CVD. Social support deprivation and social isolation are associated with a higher risk of CVD like atherosclerosis, cardiovascular mortality, and myocardial infarction. Obsessive-compulsive disorder also increases the risk of cardiovascular or metabolic complications. Patients with PTSD have a 2-fold increased risk of coronary heart disease, irrespective of the traditional CVD risk factors. Takotsubo cardiomyopathy, or stress-induced cardiomyopathy, is associated with significant emotional or physical stress. Numerous studies have supported incorporating psychosocial interventions such as cognitive behavioral therapy and transcendental meditation in the traditional cardiovascular rehabilitation programs that may help in reducing the risk of CVD events.

Conclusions Our review suggests that many mental health disorders can contribute to detrimental cardiovascular outcomes. Providers should remain vigilant and keep a low threshold in screening patients presenting with mental health disorders for CVD.

REMOTE PULMONARY ARTERY HEMODYNAMIC MONITORING AS OUTPATIENT IN HEART FAILURE

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Case Report Role of PA pressure monitoring in preventing recurrent hospital admissions in HF

Case presentation A 67-year-old male with a past medical history of nonsnichmic cardiomyopathy, HFrEF NYHAIII Stage C, hypertension, and DM with recent LHC in 2019 showed mild diffuse atherosclerosis was managed conservatively. He received an implantable PA monitoring device (CardioMEMS) in March 2021 to remotely monitor his home PA pressures on a daily basis. The average diastolic PA pressures were in the range of 5–10 mmHg since insertion of the ambulatory device with routine HF medication and lifestyle modifications. The daily monitoring system began to sense gradually raising diastolic PA from 19–22 mmHg. The patient was contacted to screen for any acute worsening of heart failure. He reported worsening of shortness of breath and a decrease in appetite corresponding to raising End DP PA pressure by the CardioMEMS. The patient was advised to 2X Lasix and report to the outpatient clinic. In the next 3–4 days, Diastolic PA began trending upward, peaking in the range of 25–30 mmHg. The patient was scheduled for an urgent outpatient visit; at this, we noted that there were no signs of fluid overload in the peripheries or any significant weight gain but worsening of his shortness of breath with all other examinations appearing normal. The patient’s diuretics regimen was further intensified in this encounter. Subsequent ambulatory pulmonary diastolic pressure begins to trend down towards his usual range of 10 mmHg with the improvement of the patient’s symptom of shortness of breath. His diuretics were gradually stepped down, and he continued to maintain his usual state health with improvement in his clinical outcomes.

Discussion In clinical practice, ambulatory hemodynamic monitoring of a patient with cardioMEMS made clinicians take medicine one step closer to the patient’s home and intercept treatment earlier, even before any worsening clinical signs, helping avoid hospitalization and at the same time improve patients quality of life in HF. GUIDE-HF study of 1000 patients reported that hemodynamics-guided management of heart failure did not result in lowering the composite endpoint rate of mortality but indicated a possible benefit primarily driven by a lower heart failure hospitalization rate compared with the control group. In this new era of COVID, we can mitigate the need for our patients to come to the medical facility frequently and to be able to keep our advanced HF patients safe and healthy at home.

Conclusion Ambulatory hemodynamic monitoring based on pulmonary pressure guided therapy for HF has shown beyond doubt that lower PA pressure, lower rates of heart failure are associated with hospital admission. These devices can sense very early changes in patient clinical conditions even before any early signs of fluid overload appear. Above all, it builds a huge patient-provider trust by knowing your patients’ hemodynamics the best.

IMPACT OF INTERSTAGE HOME MONITORING BETWEEN THE FIRST AND SECOND STAGES OF SURGICAL PALLIATION ON QUALITY MARKERS OF MORBIDITY AND MORTALITY IN IN HIGH-RISK NEONATES

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Purpose of Study Congenital Heart Defects occur in 1:100 births in the United States. The most critical and complicated are ‘single ventricle pathology’, which occur in about 5:100,000 live births. These children require multi-step surgeries and close monitoring due to high risk of sudden death related to shunt thrombosis or cardiac arrhythmia. The purpose of this retrospective observational study is to evaluate whether interstage home monitoring between the first and second stages of surgical palliation can reduce urgent cardiac interventions, unplanned admissions and mortality in such high-risk infants.

Methods Used A retrospective review of infants after completion of 1st stage surgical palliation admitted to pediatric intensive care between June 2018–December 2021 was done. Parents were provided with an infant scale, pulse oximeter,
home oxygen, and a heart rate monitor upon discharge. Parents recorded daily measurements of heart rate, oxygen saturation, all medications administered, intake and output (amount of urine and stool in diapers measured by weight), and daily body weight, which were collected and recorded at weekly clinic visits. This continued until the second stage of surgical palliation. Multivariable contingency analysis was performed using Fisher’s exact test with response variables defined as unplanned admissions, urgent cardiac intervention required, and mortality during interstage monitoring. Covariates were defined as compliance with home monitoring program with 75% overall participation defined as compliance and <50% overall participation defined as non-compliance.

Summary of Results Of the 35 infants who participated in the Interstage Home Monitoring program, 68.3% were compliant with the program. 65.7% of infants did not require unplanned hospital admissions. 14.2% had unplanned admission secondary effects related to cardiac defects, 14.2% had unplanned admission due to infection. Only 34.2% patients required cardiac intervention. Compliance to home monitoring led to fewer unplanned hospital admissions (p=0.06), but was insignificant for cardiac intervention (p=0.3), and for mortality at home (p=0.5). Mortality was low in our study with 94.3% of infants surviving to the second stage of surgical palliation.

Conclusions Infants who enrolled in a home monitoring program had fewer unplanned admissions and had increased surveillance compared to infants historically not enrolled in a monitoring program. Though larger study is needed, our observation suggests even minimal compliance in the program may give a protective benefit for surviving the interstage period.

#95 UTILIZATION OF ELECTROPHYSIOLOGICAL PROCEDURES BASED ON CURRENT PROCEDURE TERMINOLOGY (CPT) CODES IN THE UNITED STATES 2016–2017: A NATIONAL AMBULATORY SURGERY SAMPLE STUDY 2016–2017

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Purpose of Study Catheter based ablation related electrophysiological (EP) procedural reporting using current procedural terminology (CPT) codes has not been described before.

Methods Used The National Ambulatory Surgery Sample database from the years 2016–2017 was used to identify encounters with CPT codes. Encounters with first CPT code with 93650 (Attrioventricular AV node ablation), 93653 (supra-ventricular tachycardia SVT ablation), 93654 (Ventricular ablation), 93656 (Atrial fibrillation AF ablation) were used for the purpose of this study.

Summary of Results In the United States, highest number of catheter-based ablation related EP procedures were performed in the south (77,740) followed by mid-west (75,029), west (56,819) and then the north-east (37,101). The highest number of procedures were AF ablation (112,389), followed by SVT ablation (105,623), ventricular ablation (17,925) and AV nodal ablation (10,723). Higher number of procedures were performed in the fourth quarter October to December (63,147) and lowest in the first quarter January-March (56,343). Largest number of procedures were in the private insurance group (111,063) followed by Medicare (107,014), and Medicaid (14,913). 99.3% were discharged to home after their procedure. 83.26% procedures were performed in the urban teaching hospitals. 78.28% procedures were performed in hospitals with bed size more than 300 beds and 20.36% were performed in hospitals with bed size 100–299 beds. 82.66% were performed in private non-for-profit hospitals.

Conclusions This study sheds light on the utilization of EP procedures in the United States. Further studies are needed to explore the regional, seasonal, and payer-based disparities in the utilization of these procedures.

#96 CARDIAC TAMPONADE AS A PRESENTING SYMPTOM OF TUBERCULOSIS

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Case Report

Introduction Tuberculous pericarditis is a rare complication of tuberculosis (TB); the diagnosis is usually difficult to establish and may even be delayed or missed. Mortality is very high if the diagnosis is missed and difficult to treat.

Hospital Course: 66-year-old male patient known to have high blood pressure presented to the ED with 2–3 hours of chest pain. He described his substernal chest pain as dull, pressure-like, unrelated to exertion, none radiating, and associated with dizziness. He described similar pain three months before. He also described chronic cough, night sweats, and weight loss that was attributed to allergy/sinusitis and was not investigated. The physical exam was unremarkable except for being in distress. EKG in the ED showed a new right bundle branch block. The patient oxygen saturation started to drop to 89%. He began to develop hypotension in the ED, nonresponsive to fluids and requiring vasopressors. He had a computed tomography pulmonary embolism protocol in the ED that showed probably exudative pericardial effusion with increased density compared with simple fluid. The largest pockets were along the surface of the heart and posterior to the left atrium, where there was also some mass-effect along the posterior left atrium with coronary artery disease, mitral annulus, and aortic valve calcifications with pericardial calcifications. It also showed bilateral ground-glass alveolitis and dependent atelectasis along with the posterior lungs bilaterally. Transthoracic echocardiography showed possible intracardiac lesion, RV failure, loculated pericardial effusion. In the morning, the patient was emergently taken to OR for emergent thoracotomy. Soon after transfer to the OR table, the patient went into cardiac arrest. Thoracostomy was opened, and the patient was put on the bypass in around 5–10 minutes. He was safely able to come off bypass. The patient was found to have a perforated PDA rupture which was ligated, and the pericardial effusion evacuated. The patient was critically ill, requiring multiple pressors, and unfortunately passed away. Pericardial fluid analysis/PCR was suggestive of tuberculosis.

Discussion The symptoms of tuberculous pericarditis are usually nonspecific, like fever, weight loss, cough, dyspnea, chest pain, and night sweats. The symptoms usually depend upon the stage of infection, the extent of tuberculous disease outside the pericardium, and the degree of pericardial

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501

Involvement. In addition, patients may present with clinical constrictive, effusive constrictive pericarditis, myopericarditis, and/or cardiac tamponade. Pericardiocentesis with fluid analysis is required for diagnosis; however, the sensitivity for detection by PCR is even low as 15%, with tissue diagnosis required with a sensitivity of 81% to detect TB by PCR.

Case Report Olmesartan induced enteropathy is rare but should always be considered as a differential diagnosis of sprue-like enteropathy. Early diagnosis is important since replacing olmesartan with an alternative antihypertensive drug can simplify the diagnostic workup and can provide clinical improvement.

A 54-year-old male with a past medical history of hypertension, diabetes mellitus, and gout presented with the complaint of constant passing of loose watery stools, 5–6 times daily for about a month. He endorsed 35-pound weight loss, nausea, chills, and low-grade fever without any abdominal pain during this period. Additionally, he had constant chest pain, which worsened with inspiration, radiating to the right shoulder without any relieving factor for the past one week. The patient also mentioned that he was admitted to the hospital two weeks earlier with the same presentation, but now with chest pain. Initial evaluation, including the basic lab tests, was unremarkable except low bicarbonate (11) and vitals were stable. Chest x-ray revealed left lower lung opacities indicative of pneumonia which was treated with doxycycline. Imaging showed some diverticulosis without colitis and the stool pathogen panel was negative. Home medications included allopurinol, clolesveplain, cyclobenzaprine, dapagliflozin, dulaglutide, gemfibrozil, hydrochlothiazide, olmesartan, pregabalin, rosuvastatin, and sitagliptin. Colonoscopy and subsequent biopsy were unremarkable. Due to persistent diarrhea without any identifiable trigger, olmesartan was discontinued to rule out potential medication-induced enteropathy and the patient was discharged.

The patient presented 3 days after being discharged due to persistent diarrhea and chest pain. Work-up included amyloidosis, carcinoid syndrome, intestinal tuberculosis, celiac disease, VGPoma, and Zollinger-Ellison syndrome which were all negative. Chest x-ray revealed pericardial effusion which resolved shortly after admission with supportive care. However, without further gastroenterology intervention, the patient’s diarrhea began to resolve over the course of this hospital stay and the patient was experiencing one normal stool per day. The patient was discharged and, in his follow-up visit with the cardiologist two weeks later, there were no more reported symptoms of diarrhea.

Discussion Olmesartan-induced enteropathy was first reported in 2012 with the FDA publishing an adverse event warning of sprue-like enteropathy in 2013. Enteropathy most often appears after months to years of olmesartan exposure resulting in diarrhea and weight loss. Drug cessation is associated with symptom improvement within days and weight gain within weeks.

Conclusion Although rare, olmesartan-induced enteropathy is an important consideration to make when prescribing olmesartan or in patients who present with unexplained sprue-like enteropathy. Cessation of the drug can lead to rapid improvement of symptoms and quality of life.

**Abstracts**
Case Report There are well known risk factors for coronary artery disease (CAD) including diabetes mellitus, hypertension, hyperlipidemia, and/or family history. However, it has been shown that nontraditional risk factors also have a significant role in more than 50% of CAD cases. For example, many drugs have been reported to trigger an acute coronary artery syndrome. We report a case of Non ST Elevation Myocardial Infarction (NSTEMI) associated with hyperglycemia due to dexamethasone use.

Case 70-year-old woman with a past medical history of coronary artery disease, end stage renal disease, diabetes mellitus, hypertension and chronic back pain presented to the emergency department complaining of neck pain, palpitations, and significant hyperglycemia status post a dexamethasone injection for her chronic back pain. Patient states that the glucometer read blood glucose levels from 650 to 700 mg/dL directly after the shot was given. During the first assessment, her vital signs showed HR:75 bpm, RR: 16 rpm BP: 200/89 mmHg O2 Sat:98% on room air and labs of Hb: 12 g/dL WBC: 299 k/dl, Glucose:697 mg/dL, Serum osmolality:319 mOsm/kg, K+:4.7 MMOL/L, HCO3:21 MMOL/L, tropon T High Sensitivity:147.7 ng/l. Electrocardiogram showed sinus rhythm with left ventricular hypertrophy. Hyperglycemia and blood pressure were controlled in the emergency room and the patient was managed as a NSTEMI. Anti-ischemic treatment was started with heparin drip, dual antiplatelet therapy and high dose statin. She was transferred to the catheterization lab where the angiogram revealed obstructive proximal right coronary artery stenosis, where one stent was placed. Patient was discharged the following day on guideline directed medical therapy: dual antiplatelet therapy, beta-blocker, and angiotensin converting enzyme inhibitor.

Discussion Glucocorticoids impact traditional risk factors for CAD, but also influence vascular functions, atherogenesis, and cardiac remodeling following ischemia or intravascular injury. Dexamethasone can promote an atherogenic and hypercoagulable state through multiple pathways, by increasing levels of cardiac remodeling following ischemia or intravascular injury. CAD, but also influence vascular functions, atherogenesis, and hypercoagulability.

Case Report The heart is an organ with high metabolic demand, making mitochondrial function a key determinant of myocardial performance. Mitochondrial myopathy, encephalomyopathy, lactic acidosis and stroke-like episodes (MELAS) syndrome is a genetically inherited multisystemic disorder caused by mutations of mitochondrial DNA. Cardiac dysfunction occurs in approximately a third of these patients. The most common cardiac abnormality is ventricular hypertrophy. Conduction abnormalities have been reported but are not well elucidated. We report a case of a 23-year-old woman with MELAS syndrome who presented with complete heart block without structural changes of the heart mimicking a seizure-like episode.

Case 23-year-old woman with past medical history of diabetes mellitus and mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes (MELAS) syndrome came to the emergency department accompanied by her mother due to a seizure-like episode. The patient's history was limited to patient's mother due to a baseline non-communicative state. The mother inferred witnessing an episode of tonic-clonic movements lasting 10 minutes with no apparent conscious responsiveness. First assessment showed vital signs and labs of HR: 41 bpm, RR: 17 rpm, BP: 130/92 mmHg, O2 Sat: 98% on room air, Hb: 17.1 g/dL WBC: 8.9 k/dl, PLT: 100 k/dl, lactic acid 5.6 MMOL/L, K+: 5.3 MMOL/L, and TSH: 1.84 mg/dl. Electrocardiogram demonstrated a complete heart block (figure 1), and transthoracic echocardiogram showed a left ventricular apical akinesis with normal wall motion of the mid and basal segments with left ventricular ejection fraction of 55%. Her mother did not consent to temporary transvenous pacing, so the patient was started on dopamine drip preceding by implantation of a permanent pacemaker. The patient was discharged after two days of hospitalization.

Discussion The hallmark abnormality of MELAS is the occurrence of stroke-like episodes and seizures in the presence of hyperlactatemia. Cardiac abnormalities are common, occurring in 30–56% of patients. Hypertrophic cardiomyopathy is the most common phenotype, followed by dilated cardiomyopathy, and pulmonary arterial hypertension respectively. Electrophysiological abnormalities such as complete heart block have been reported in the presence of structural abnormalities such as chambers dilation and hypertrophy. However, the case we describe did not have any structural heart disease, which raises the hypothesis that complete heart block can occur even in the absence of structural changes, and more studies are needed to confirm this association.

Case Report We present a case of a middle-age male who based on the Duke criteria (DC), we were able to rule out infective endocarditis (IE) before proceeding with advanced imaging.
Abstracts

Case We present a case of a 51-year-old man with past medical history of heroin and cocaine use disorder, that was admitted to the intensive care unit (ICU) because COVID-19 pneumonia. On day 1 of admission, transthoracic echocardiogram (TTE) showed moderate tricuspid regurgitation. In the ICU, blood cultures (BC) were positive for *Staphylococcus coagulase-negative species*, patient received a course of vancomycin for 7 days. On day 17, the patient had repeat TTE, which showed new nodular thickening of the tricuspid valve associated with tricuspid regurgitation. BC were sent that same day, and they grew out *Staphylococcus coagulase-negative species*. At that time, it was not clear if new tricuspid valve findings were secondary to vegetation or a thrombus. The DC for infective endocarditis was applied to determine whether the findings on the TTE were due to IE. Major criteria include positive blood cultures and findings of vascular vegetation on echocardiography. After analyzing the BC and meeting with the microbiology personnel, it was found that the *Staphylococcus coagulase-negative species* found were different from each other. However, there was a possible vegetation present, shown on echocardiography. The patient had predisposing heart condition of tricuspid regurgitation and a history of IV drug abuse. Fever was absent. As for vascular phenomena, the patient did not have skin changes and no pulmonary embolism was found following chest CT protocol. As for immunologic phenomena, the patient did not have Roth spots or glomerulonephritis. Lastly, for microbiological evidence, the patient's blood cultures were possibly positive due to contamination. Based on the DC the patient had a possible diagnosis of IC but it was rejected because a patient had a firm alternative diagnosis, mainly a ventricular thrombus. The patient received anticoagulation treatment for thrombus, and he was discharged on his 24th day of hospitalization without complications.

Discussion The diagnosis of IE remains difficult due to low specificity of the laboratory and imaging tests. Our patient had all the risk factors to believe it was endocarditis instead of a thrombus. Based on the DC, endocarditis was ruled out and the patient responded well to anticoagulation. More studies are needed to clarify the utility of the DC as a method to differentiate IE from thrombus before proceeding with advanced imaging.

#102 IDIOPATHIC CARDIOMYOPATHY ASSOCIATED WITH DELAYED GADOLINIUM ENHANCEMENT AND FIBROSIS FOUND ON ENDOCARDIAL BIOPSIES, CAN ENDOCARDIAL FIBROSIS BE POSSIBLE IN WEST TEXAS?

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Case Report Endomyocardial fibrosis (EMF) is a disease of rural poverty that is characterized by fibrosis of the apical endocardium. It is thought that eosinophils infiltrate the heart due to transient episodes of eosinophilia secondary to parasitic infections.

Case 1: A 58-year-old man with past medical history of asthma and atrial fibrillation (AFIB) was admitted to hospital with dyspnea and elevated troponins. During this admission he was also diagnosed with allergic bronchopulmonary aspergillosis. He met criteria based on eosinophils (6.26 K/u L), chest imaging, and positive IgG, and IgE levels for aspergillosis. He received treatment with prednisone. Transthoracic echocardiogram (TTE) was done and showed a left ventricular ejection fraction (LVEF) of 30%. Coronary angiography did not reveal epicardial coronary artery disease (CAD), and CMR imaging showed subendocardial delayed gadolinium enhancement suggestive of scarring in the septal and left inferoseptal walls with LV EF improvement (47%). The possibility of eosinophilic myocarditis was considered and the patient was scheduled for EMB that demonstrated moderate myocyte hypertrophy and moderate scattered focal interstitial fibrosis. The day when the EMB was done, eosinophils were within normal limits (0.145K/μL) and the patient had already completed the course of steroids.

Case 2: A 65-year-old man with PMH of AFIB was evaluated due to new-onset systolic heart failure found during a previous hospitalization where he had an AFIB ablation. TTE demonstrated a LVEF of 34% without wall motion abnormalities. On coronary angiography no significant CAD was found. CMR was done and demonstrated delayed gadolinium enhancement suggestive of scarring in the septal and anteroseptal mid-myocardial wall. The differential diagnosis was either sarcoidosis or amyloidosis. EMB was done and showed moderate myocyte hypertrophy and moderate interstitial fibrosis. The patient was approached as idiopathic dilated cardiomyopathy and is currently stable on guidelines directed medical therapy.

Discussion EMF is a disease from the tropics and primarily in poor rural areas from several countries of eastern Africa. This disease can be secondary to late scarring due to eosinophilic deposition and/or chronic infections. West Texas is considered a rural area, where autochthonous transmission of neglected parasitic diseases has become increasingly reported. We consider that the first case most likely had scarring due to previous eosinophilic infiltrate secondary to the bronchopulmonary aspergillosis. In contrast case 2 does not have a clear etiology for endomyocardial fibrosis and appears to be more advanced.
Case Report Among all patients with heart failure, nearly half have heart failure with preserved ejection fraction (HFpEF). Its prevalence is increasing by about 1% annually relative to that of heart failure with reduced ejection fraction. A pulmonary artery pressure hemodynamic monitoring system, CardioMEMS, has been shown to improve quality of life and decrease hospitalizations in patients with HFpEF. We report the first patient implanted with a CardioMEMS hemodynamic monitoring system done in our institution to guide heart failure therapy.

Case 60-year-old man with a past medical history of chronic kidney disease, atrial fibrillation, and obstructive sleep apnea, was diagnosed with HFpEF associated to coronary artery disease and valvular heart disease. He was New York Heart Association class III, had one hospitalization for congestion at our institution, and multiple prior admissions at outside hospitals. With the prior history he met criteria and agreed to undergo CardioMEMS implantation. Right heart catheterization hemodynamics were: Right atrial pressure: 18 mmHg, Right ventricular systolic pressure: 92 mmHg, Right ventricular diastolic pressure: 2 mmHg, Pulmonary artery systolic pressure (PASP): 90 mmHg, Pulmonary artery diastolic pressure (PADP): 21 mmHg, mean pulmonary artery pressure: 52 mmHg, Pulmonary artery wedge pressure: 33 mmHg, Cardiac output by thermodilution 3.61 L/min, cardiac index: 2.47 L/min/m2. He met criteria for combined pulmonary hypertension by the revised ESC criteria. Despite increasing diuretics after implant, he required an additional hospitalization, where he was also noted to be in atrial fibrillation. After IV diuresis, escalating diuretics and a cardioversion, he was able to be discharged. During this time he learned about dietary habits that were harmful to him, and improved CPAP compliance by using a chin strap (Figure 1).

Discussion The use of an implantable device to provide daily pulmonary artery hemodynamic information has been shown to reduce heart failure hospitalizations and all-cause hospitalization either in heart failure with reduced ejection fraction or HFpEF. Once implanted, the device can detect rising pressures in the pulmonary artery, which can be an early warning sign.
of fluid backing up in the lungs and pending onset of congestion before symptoms are reported. Because the patients have to measure the pressures on their own, it is highly recommended that the devices are implanted in compliant patients. After pressures are measured, they are automatically transmitted electronically to providers, in that way they can review the readings and proactively adjust medical therapy which helps with symptoms which include edema and dyspnea.

**Abstracts**

### #105 TAKOTSUBO CARDIOMYOPATHY DUE TO HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS SECONDARY TO COVID-19 PNEUMONIA

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**Case Report**

Hemophagocytic lymphohistiocytosis (HLH) is a potentially fatal disease characterized by excessive immune response and cytopenia. Severe COVID-19 infection induces a life-threatening inflammatory syndrome associated with intense cytokine release that similar to HLH. We present a patient who developed takotsubo cardiomyopathy due to HLH.

**Case**

24-year-old man with a past medical history of obesity was admitted at the medical intensive care unit (MICU) due to acute respiratory distress syndrome secondary to COVID-19 pneumonia. During the MICU stay, the patient required a high dose of vasopressors and ventilatory support. For Covid management, the patient received tocilizumab, high dose steroids (20 mg daily of dexamethasone), and empiric antibiotic coverage with vancomycin and cefepime. On day six of MICU admission, the patient developed hypertriglyceridemia (TGL) that was initially thought to be secondary to propofol, but after discontinuing propofol the patient continued to have increasing TGL levels. On day 8 of MICU admission, the suspicion of HLH increased, HScores was calculated, and the patient had a 70-80% probability of having HLH (181 points: Temperature of 103°F, ferritin 2580 ng/mL, TGL: 771 mg/dL, Fibrinogen 220 mg/dL, AST: 116 U/L). On day 10 of MICU admission, troponins increased from 7.5 to 2,966 ng/L, telemetry showed diffuse ST elevations, but ECG did not show any ischemic changes. At that time, his clinical parameters included HR: 96 bpm, BP: 92/42 mmHg, O2 Sat: 93% on mechanical ventilation with pressure support FIO2: 100%, Hb: 11.6 g/dL, WBC: 10.36 k/dL, Plt: 210 k/dL. Acute stress cardiomyopathy secondary to HLH was suspected. Transthoracic echocardiogram demonstrated preserved ejection fraction and inferoapical akinesia consistent as takotsubo cardiomyopathy. On day 11 of MICU admission, the patient had a cardiac arrest and after 30 minutes of cardiopulmonary resuscitation no return of spontaneous circulation was achieved.

**Discussion**

HLH induces a cytokine cascade that causes an excessive inflammatory response and multi-organ dysfunction that can be secondary to infections such as Covid-19. Takotsubo cardiomyopathy also known as stress cardiomyopathy, is a reversible dysfunction characterized by acute hypokinesia/akinesia of the apical and middle segments of the left ventricle that extends beyond a unique coronary territory. We conclude that the trigger for takotsubo cardiomyopathy in this case was related to excess catecholamine release secondary to HLH.

### #106 AN UNUSUAL CASE OF POSTPARTUM CARDIAC TAMPOMANDE

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**Case Report**

Cardiac tamponade is an uncommon but life-threatening condition. Its occurrence in pregnant women or the puerperium may be somewhat confused with peripartum cardiac disease. Although diseases of the pericardium may occur sporadically during pregnancy, there is no evidence that pregnancy increases the susceptibility to pericardial diseases. However, recognition of other associated extracardiac manifestations coincident with this serious condition may lead to detection of the underlying etiology and consequently, the appropriate treatment. We report a rare presentation of Systemic Lupus erythematosus (SLE) with cardiac tamponade in a postpartum lady.

**Case presentation**

A 24-year-old female at 36th week of gestation was hospitalized due to seizure-like episodes. She has an unremarkable past medical, family, and social history. On presentation, she was alert and oriented with no distress. Her physical exam was unremarkable. She underwent labor induction on the day of admission. Her vaginal delivery was complicated by postpartum hemorrhage. Two days after delivery, she developed shortness of breath and hemoptysis. She was normotensive, tachycardic with pulsus paradoxus, tachypneic, and required supplemental oxygen. The cardiac exam revealed JVD and distant heart sounds. Chest exam revealed decreased breath sounds. CXR showed patchy infiltrates. EKG showed electrical alternans. Transthoracic echocardiography showed large pericardial effusion with signs of tamponade. Labs showed normocytic anemia with positive Coomb’s test, IgG, and hypoalbuninemia. She underwent pericardiocentesis. Based on clinical manifestations, a lupus panel was ordered. It was positive for ANA, Anti-dsDNA, and Anti-Smith antibodies with low C3 and C4. She was started on high-dose steroids in addition to mycophenolate Mofetil and hydroxychloroquine. She improved on SLE medications.

**Discussion**

There are no published data indicating the incidence of pericardial disease in pregnancy. Acute pericardial disease is usually viral. Infectious causes other than viral are less common. Noninfectious causes include trauma, iatrogenic, neoplastic, and autoimmune diseases. SLE is the most common autoimmune disease associated with pericarditis, and pericarditis is the most frequent cardiac manifestation of SLE. It is found in 62% of autopsies. However, pericardial effusion causing cardiac tamponade is an uncommon complication in lupus. Its incidence is estimated at 1-2%. The diagnosis of SLE in our case was based on the combined picture of pericardial effusion, alveolar hemorrhage, anemia, neurologic manifestation, and subsequent serology. These patients are usually treated with pericardial drainage and immunosuppressant therapy. Physicians should be vigilant to recognize cardiac tamponade in a postpartum woman who presents with suggestive
DO YOU KNOW THAT BRUGADA SYNDROME IS MORE PREVALENT IN SCHIZOPHRENIC PATIENTS?

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Case Report Brugada syndrome (BrS) is an autosomal dominant genetic disorder presented with abnormal findings on electrocardiogram (ECG). It increases risk of ventricular tachyarrhythmias and sudden cardiac death (SCD). Brugada ECG pattern characterized by a pseudo-right bundle branch block and persistent ST segment elevation in leads V1 to V2. It is more common among schizophrenic patient than in general population. Here we report a case of schizophrenia diagnosed with Brugada syndrome.

Case presentation This is a 25-year-old male who presented to ER after a syncopal attack. He was told that he was found unconscious, no seizure, no urine incontinence. He stated he only remember having shortness of breath and dizziness while he was sitting just before the event. He reported similar syncopal episode 2 days ago. Denied SOB, chest pain, palpitation, fever, chills, cough, or other signs of infection. He had history of similar episodes last year. He was diagnosed with schizophrenia and bipolar disorder many years ago, as well anxiety. He was admitted to psychiatric facility at the age of 14–15 due to suicide attempt. He has history of Asthma. He takes Sertraline and aripiprazole and reported compliance. No family history of heart problem or sudden death He used to be heavy smoker, Meth and Marijuana user, but quit in 4 years ago. He denies EtOH intake. Vital signs were normal and physical exam was unremarkable. EKG showed Biphasic T wave inversion in V1 & V2 consistent with Brugada pattern type A. Lab results including urine screening test were unremarkable. Transthoracic echocardiography did not show any abnormalities. He was evaluated by Electrophysiology team and underwent after AICD placement without any complications. No further syncopal episodes occurred, and he was discharged in good conditions.

Discussion Patients with schizophrenia have been found to have Brugada pattern ECGs more than the general population. Blom et al analyzed ECGs of a cohort of 275 patients with schizophrenia compared with nonschizophrenia individuals of similar age. They found out Brugada pattern was more common in the schizophrenia cohort (11.6%) compared with non-schizophrenic cohorts at 1.1% and 2.4%. This result of 11.6% is significantly higher than the prevalence in general population estimated at 0.05–1%. Rastogi et al illustrated in his review article some similarities in pathophysiology of Brugada and schizophrenia. Genetic Mutations in calcium channels that have been found in schizophrenia are also present in 1–3% of BrS patients. Postrema et al presented a detailed list of drugs that induce or unmask Brugada pattern. ICD is the first line treatment for BrS. It reduces mortality rates in symptomatic patients with BrS. Providers should be vigilant for Brugada ECG pattern in schizophrenic patients and aware of the antipsychotic drugs that unmask or induce this fatal condition.

SUPERFICIAL FEMORAL ARTERY OCCLUSION COMPPLICATED BY STENT FRACTURE

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Case Report Endovascular intervention for clogged arteries have shifted towards minimally invasive options such as angioplasty, atherectomy, or placement of stents. Stents are constantly being improved to increase durability and lifetime. Stent fracture, although uncommon, is associated with potentially severe consequences such as in-stent restenosis (ISR) or stent thrombosis (ST). Thus, repeated vessel revascularization is needed. We report a peculiar case of a fractured stent involving the distal superficial femoral artery (SFA).

Case presentation Female patient age 63 with a PMH of peripheral artery disease with prior bilateral peripheral vascular interventions including the most recent being the placement of an iliac stent, hypertension, dihydroxyalaminodehydrogenase deficiency, paroxysmal atrial fibrillation, cerebrovascular accident, and an active smoker who presents with severe right lower leg resting pain. Patient was referred for peripheral angiography which showed chronic total occlusion (CTO) of the common femoral artery (CFA) and SFA. Decision was reached to treat percutaneously and for that purpose crossing catheter and guide wire was utilized to cross CTO. Balloon angioplasty of the CFA and SFA were performed and revascularization was achieved. It then became clear that the reason for occlusion was a stent fracture of a prior placed stent. At this point, flow was achieved but the struts of the stent fracture appeared to be the nidus for obstruction. The utilization of a covered stent to isolate the struts from the lumen wall seem to be a good option and henceforth, a Viabahn self-expanding stent was placed within the prior fracture. Significant improvement in the lesion was noted on angiography. Post-operative course was unremarkable, and patient was discharged on hospital the next with instruction for follow-up with the cardiologist.

Conclusion Our case proves that Viabahn covered stent is a good option to treat occlusion due to a prior stent fracture. This helps isolate the struts from the vessel lumen which could act as nidus for future occlusion.

EGK CHANGES IN SEVERE HYPERCALCEMIA MIMICKING BRUGADA’S SYNDROME

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Case Report A 62-year-old Caucasian, female patient with history of celiac disease and chronic pain s/p spinal cord stimulator presented to our institution to follow up on abnormal lab findings. The patient presented to her PCP with complaints of worsening weakness, nausea, vomiting, constipation, polydipsia, and occasional palpitations. Labs resulted a
severely elevated serum calcium level (17 mg/dL), increased BUN (32), and elevated Cr (1.8) indicating acute kidney injury. Full workup was initiated. Vitamin D, 25-Hydroxy level returned greater than 209 and PTH resulted in a normal range of 22. Detailed history revealed that the patient was taking 50,000 units of vitamin D3 by mouth six times/week for six months. Fear surrounding the current COVID-19 pandemic prompted the exorbitant intake of vitamin D supplementation in hopes of immune improvement. Bisphosphonate were contraindicated due to AKI. Volume expansion with normal saline and calcitonin successfully decreased the patient’s serum calcium.

Discussion

The diagnostic criteria for reversible Brugada pattern, recently classified as Brugada phenocopy, includes four mandatory components. Primarily, an ECG tracing delineating type 1 or type 2 Brugada morphology. Secondarily, the presence of an underlying condition that is identifiable and reversible. Third, complete resolution of the ECG pattern upon elimination or correction of the underlying condition. Fourth, a low probability for Brugada syndrome determined by the lack of symptoms, clinical history, and family history. Our patient experienced severe hypercalcemia with palpitations that prompted an ECG. The abnormal ECG produced was read independently by two interventional cardiologists and a cardiac electrophysiologist who all concluded the ST segment and T wave deviations were consistent with Brugada pattern type 1. Importantly, the ECG was compared to one from a year prior which showed a normal rate and rhythm. There was complete resolution on repeat ECG once serum calcium was returned to reference range. The patient did not experience Brugada specific symptoms of syncope, seizures, nocturnal agonal breathing, or sudden cardiac death. No family history suggested Brugada syndrome or cardiac issues. Electronic medical record documentation tracked over the last 5 years showed no concerns for prior arrhythmias or syncope. Additionally, the patient does not fit the epidemiological profile of a male of Southeast Asian decent which is classically associated with Brugada syndrome.

To our knowledge, this is the first documented presentation of Brugada phenocopy induced by severe hypercalcemia secondary to vitamin D toxicity.

Conclusion

Although the mechanism is not completely understood, severe hypercalcemia can cause a reversible type 1 Brugada pattern on ECG. Careful consideration of vitamin supplementation must be discussed with patients to avoid potentially fatal cardiac outcomes.

Initially, the patient underwent a full rheumatologic, endocrinologic, and metabolic work-up revealing a positive ANA and Sjogren’s Syndrome A-nuclear antibody. Full cardiac work-up revealed normal segmental anatomy with diffuse dilation of both coronaries and anomalous origin of the right coronary and prominent collateral flow within the septum. Duplex ultrasound revealed retrograde flow in the right coronary artery suspect of a steal phenomenon from the pulmonary arterial system. As a result, the patient was referred for a Cardiac CT and Cardiac MRI for further evaluation.

Cardiac computed tomography confirmed severe dilation of both right (6 mm, proximally) and left (left main 7 mm and proximal LAD 6 mm) coronary systems with significant collateral blood flow, likely stemming from the left anterior descending artery to provide retrograde flow. Additionally, the right coronary artery was found to have anomalous origin from the main pulmonary artery.

Quantitative functional analysis using cardiac magnetic resonance imaging indicated good left ventricular function with no signs of ischemia or infarction, confirmed extensive collateralization, and increased delayed signal along the septum confirmed to be septal collaterals rather than delayed septal enhancement from scarring or infiltrative process.

The patient was advised to cease all sports and major physical activity. Patient then proceeded with successful surgical correction with re-implantation of the anomalous R coronary artery to the aorta above the sinotubular junction. Two years status post-correction, the patient is well and has been cleared for light physical activity.

Anomalous coronary arteries are rare abnormalities usually caused by abnormal embryogenesis; however, an anomalous right coronary artery from the pulmonary artery (ARCAPA) is considered the rarest with nearly 100 reported cases and a prevalence of 0.002%. This anomaly is considered to be isolated, benign and asymptomatic; however, sequelae have been reported. Collateralization of septal and LAD perforators is essential in order to prevent infarction and SCD. With retrograde flow in the right coronary system and the high probability of a steal phenomenon occurring in the pulmonary arterial system, septal perforators and LAD collaterals adequately compensated for the loss of significant coronary flow. Although much less severe with fewer complications than ALCAPA, understanding this rare pathology, its detection, and its management are essential.
the Emergency Department with chest pain and shortness of breath. The patient had a heart rate of 110 but was normotensive on exam with ECG showing sinus tachycardia, normal voltage, and no ST changes. He was found to have worsening pleural metastases and a new moderately sized pericardial effusion on CT chest having started treatment with Nivolumab, a PD-1 inhibitor, one week prior to presentation. He had undergone CT pulmonary angiography two months prior to starting Nivolumab with no pericardial effusion shown on imaging. Transthoracic echocardiogram (TTE) confirmed a moderate to large pericardial effusion with no sign of tamponade physiology.

The Cardiology consult team evaluated the patient and recommended obtaining serial TTEs every two to four weeks to monitor size of the effusion and prevent development of tamponade. The patient came for each of these appointments with stability in effusion size until five months later during which he presented to the Emergency Department for weakness and dehydration. He was tachycardic with heart rate of 120 and blood pressure of 100/75 and was administered one liter of fluids. TTE was obtained which showed enlargement of the pericardial effusion with tamponade physiology. The patient was brought to the operating room with pericardial window performed by Cardiovascular Surgery with removal of 1.1 liters of serous fluid and intrapericardial drain placement. The pericardial fluid was sent for culture and flow cytometry and showed negative gram stain, fungal culture, with no malignant cells observed. Therefore, the development of the patient's pericardial effusion was deemed likely due to initiation of Nivolumab therapy.

Decision-Making ICIs have been associated with cardiac immune related adverse events (irAEs) including myocarditis, vasculitis, and pericardial effusion. The Cardiology team used serial TTEs to assess pericardial effusion size and stability for this patient. This approach enabled the medical team to expedite treatment when the patient developed signs concerning for cardiac tamponade.

Conclusion Pericardial disease is a rare, but serious side effect of ICIs, with fatalities occurring in over 21% of cases. Patients with symptoms concerning for cardiac irAEs should seek immediate medical care. TTE can be used to evaluate for pericardial disease and serial TTEs can be used to monitor and treat enlarging pericardial effusions with concern for cardiac tamponade.

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#112 A PSEUDOEANEURYSM WITH TRUE CONSEQUENCES

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Case Report Left ventricular aneurysms are serious, potentially fatal cardiac complications that rarely occur after myocardial infarction. General classification distinguishes true aneurysms from pseudoeaneurysms based on involvement of vessel wall layers. The latter forms when pooled blood from cardiac rupture is contained by the pericardium. Pseudoeaneurysm diagnosis is challenging due to nonspecific symptom presentation, including congestive heart failure, chest pain, dyspnea, or even asymptomatic. With the high propensity for pseudoeaneurysms to rupture and result in sudden death, rapid diagnosis and treatment are essential to prevent significant morbidity and mortality. Currently, surgical intervention is the favored management, though medical therapy with afterload reduction, anticoagulation, and antiplatelet agents is used in patients not deemed surgical candidates. We present a unique case of new onset left ventricular pseudoeaneurysm presenting as orthostatic syncope in a patient with recent NSTEMI.

Mr. P is a 64-year-old Caucasian male with recent NSTEMI requiring PCI and subsequent drug-eluting stent, atrial fibrillation, hypertension, and type 2 diabetes admitted for evaluation after a near-syncopal episode. The patient had a prolonged hospitalization 2 months prior for NSTEMI and embolic stroke, during which time he experienced cardiac arrest due to the NSTEMI. He was resuscitated and taken for coronary angiography where a stent was placed to the first diagonal artery, but a distal LAD embolism noted was unable to be stented due to total infarction of the tissue. His hospitalization was complicated by prolonged ICU admission with treatment for sepsis and cardiogenic shock post-PCI. He was noted to have a small LV aneurysm without thrombus during this time. He was discharged to home and began to experience syncopal episodes 1 month later. Thorough workup upon re-admission initially revealed no changes in echocardiography, and the patient’s orthostasis improved with IV fluid resuscitation. He was again discharged for ongoing rehabilitation. However, the patient’s pre-syncopal episodes without chest pain continued even 2 weeks later with profound orthostasis (change in systolic blood pressure >100 mmHg upon standing), and repeat echocardiography revealed an apical pseudoeaneurysm. Further evaluation via gated CT and cardiac MRI revealed a left ventricular pseudoeaneurysm measuring up to 3.3 x 3.9 cm that had significantly increased in size from two months prior, at which time it was noted to be a small true aneurysm. He is tentatively being evaluated for surgical correction as of the time of this case report.

In summary, LV pseudoeaneurysms carry a substantial risk of both morbidity and mortality due to high risk of rupture, especially if un-diagnosed. Symptoms at presentation can be very nonspecific, but the diagnosis should be suspected in patients with recent myocardial infarction, specifically those with major vessel occlusions not amenable to stenting.

#113 IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PERFORATES THE RIGHT ATRIUM BUT FAILS TO SHOCK ARRHYTHMIA


10.1136/jim-2022-SRMC.113

Case Report A 51-year-old lady presented after a pulseless electric activity arrest and respiratory failure. She had a history of heart failure with a reduced ejection fraction of 10% with a dual-chamber implantable cardioverter-defibrillator (ICD) placed two years ago. She was found unresponsive and was admitted after ACLS and intubation, followed by resuscitation for shock. ECG showed atrial flutter with a rapid ventricular response. A mediastinal window Chest CT displayed the tip of the ICD’s right atrial lead extending through the right atrial myocardium and the anterior extra-cardiac soft tissue into the right lung middle lobe. Initially, the plan was for urgent surgical correction of the ICD displacement; however, there was no echocardiographic evidence of pericardial...
effusion and no radiographic evidence of a pneumothorax, suggesting a more chronic process. Device interrogation revealed only noise on the right atrial lead and an 11-minute episode of a supraventricular tachycardia of 170 BPM that was not differentiated due to atrial lead malfunction. The right ventricular lead was functioning normally but programmed to a ventricular fibrillation zone of 180 BPM. The cause of arrest could not be ascertained, with a differential diagnosis of pulseless tachycardia in the setting of undifferentiated shock that was not resuscitated by the ICD due to it being below the set threshold or due to improper sensing by the right atrial lead. She was placed on Amiodarone, but then the family elected for withdrawal of care.

ICD lead perforation rarely occurs, and the process is related to lead stiffness, increased torsion of the lead coil, and myocardial wall thinning, with the right atrium at the highest risk. Predispositions include low BMI, old age, dilated cardiomyopathy, and anticoagulant usage. Diagnosis is by imaging with chest x-ray and CT scan. Clinical manifestations can be acute with pericardial tamponade or pneumothorax, in which treatment includes urgent surgical evaluation. Chronic presentations, however, tend to be less life-threatening and include ICD lead malfunction, persistent chest pain or dyspnea, and a chronic pericardial effusion. In these instances, intervention may be more appropriate in the controlled setting. In our case, while lead malfunction may have contributed to the deterioration, urgent ICD lead repositioning in the shock state would have been detrimental and unnecessary.

### Abstract #114 Figure 1

#### THE MISFIT MITRAL VALVE

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**Case Report** A 70 year old female with history of rheumatic fever (RF) with resultant surgical mitral valve replacement with bioprosthetic valve 10 years prior presented to the hospital with dyspnea and leg edema. Examination revealed a systolic and diastolic murmur 3/5 in intensity heard best at the apex. Labs significant for an elevated NT-proBNP and chest XR showed bilateral interstitial opacities. The patient was admitted to the cardiac care unit for suspected acute decompensated heart failure. Transthoracic echocardiogram revealed a preserved ejection fraction with normal diastolic function, however it also showed the bioprosthetic mitral valve seated angled toward the left ventricular outflow tract (rather than the left ventricular cavity). A transesophageal echocardiogram (TEE) was then performed and confirmed the valve oriented to the basal interventricular septum and left ventricular outflow tract. The effective regurgitant orifice (ERO) was calculated at 0.54 cm² with a regurgitant volume of 68 ml/beat, as well as a mean transmitral gradient of 5 mmHg. These findings were consistent with severe mitral regurgitation (MR) and severe mitral stenosis (MS). Structural cardiology was consulted and the patient is currently undergoing evaluation for mitral valve replacement.

RF is the leading cause of MS. Management of such can be either medical or surgical. Individuals with long-standing MS can develop severe complications including low cardiac output, pulmonary congestion, and pulmonary hypertension. Ultimately, this warrants surgical intervention with mitral valvotomy or replacement. The most common complications of a prosthetic valve include thromboembolism, structural valve dysfunction, and endocarditis. In total, serious complications occur in about 2–3% per patient-year. Thus, it is important to recognize these early signs of valve dysfunction. In our patient, she had malposition and stenosis with resulting regurgitation of her bioprosthetic mitral valve.

Echo-TEE with 3D imaging showing a bioprosthetic mitral valve oriented to basal interventricular septum and LVOT rather than LV cavity. Findings also significant for severe bioprosthetic valve stenosis and regurgitation.

### Abstract #115

#### ETHICAL ISSUES REGARDING SURGICAL MANAGEMENT OF INTRAVENOUS DRUG USE ASSOCIATED ENDOCARDITIS

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**Case Report** Withholding of valve surgery in active, non-compliant IV drug use (IDU) patient’s is a controversial and ethical issue that calls for a rigorous multi-disciplinary assessment of the ability to comply with therapy and the willingness to...
undergo rehabilitation. We present a case of a 39-year-old male with medical history of IDU brought to the emergency room due to a two-day history of altered mental status with associated fever and night sweats. Physical examination revealed a new holosystolic murmur at the left lower sternal border. Laboratories were remarkable for leukocytosis. Blood cultures were positive for methicillin resistant Staphylococcus aureus. Echocardiogram showed new onset valvular disease and transesophageal echocardiogram showed a perforated aortic valve and a mobile vegetation on the posterior leaflet of the tricuspid valve. Clinical course was complicated by acute decompensated heart failure and pulmonary septic emboli. Due to rapid hemodynamic deterioration patient underwent emergent aortic valve replacement and posterior tricuspid valvectomy after which he completed 42 days of antibiotics. On follow-up outpatient visit he was found compliant with medical therapy and his drug rehabilitation program. Despite antimicrobial agents’ availability, development of advanced diagnostic methods and modern surgical interventions infectious endocarditis (IE) incidence remains unchanged.

We highlight the importance of a thorough physical examination and diagnostic imaging studies for IE since delay can lead to life-threatening complications such as severe valvular disease, decompensated heart failure, embolic events, sepsis and death. Close outpatient follow-up and monitoring resulted to be essential on improving prognosis and IDU relapse in this case. However, recurrence rates and non-compliance in this patient population raises concern for offering valve surgery therefore a thorough assessment of social support needs to be established for proper management.

**Case Report**

Pericarditis is often accompanied by a pericardial effusion and can sometimes progress to cardiac tamponade. Etiologies include infectious processes, inflammatory diseases, metabolic disorders, cardiovascular diseases and idiopathic causes. Some clinical features include retrosternal chest pain, dyspnea, pericardial friction rub and characteristic ECG changes. Pericardial effusion secondary to hypothyroidism is well described; however, rapid accumulation of a large amount of fluid leading to cardiac tamponade is unusual.

A 30-year-old obese man with hypothyroidism presented to the emergency department with retrosternal chest pain. Pain was described as oppressive, worse with inspiration and improved by sitting forward. No fever, chills, illict drug use or recent illness were reported. Hypothyroidism was diagnosed two years prior and levothyroxine was initiated but patient was non-adherent to regimen. Upon evaluation, distant heart sounds without jugular venous distention were noted on physical exam. Electrocardiogram (ECG) showed diffuse ST segment elevations and low voltages. Cardiac enzymes were negative. Echocardiogram showed a small pericardial effusion measuring 7 mm without hemodynamic compromise. After evaluation by cardiology service, patient was discharged home on high dose non-steroidal anti-inflammatory drugs (NSAIDs). Nevertheless, patient returned three days later with worsening symptoms. Patient was admitted to hospital for close monitoring and Colchicine was added to treatment regimen. Follow up echocardiogram two days later, showed progression of pericardial effusion, now measuring 2.5 cm with physiologic evidence of cardiac tamponade. Telemetry showed characteristic features of electrical alternans. Emergent pericardial window was performed by cardiothoracic surgery with release of 800 ml of serosanguinous fluid.

Rheumatologic, infectious and malignancy workup was negative. TSH was elevated at 32.17 (n, 0.46–4.6 uIU/L) along with low free T4 of 0.1 (n, 0.78–2.19 ng/dL) and low and free T3 of 1.1 (n, 2.77–5.27 pg/mL). Given these findings, pericarditis due to thyroid dysfunction was considered. Levothyroxine dose was optimized and compliance was encouraged. Echocardiogram one week later, revealed no significant re-accumulation of pericardial fluid and due to clinical improvement, patient was discharged home. Follow up with cardiologist revealed complete resolution of symptoms and normalization of thyroid function tests.

This case illustrates an uncommon etiology of a potentially fatal cardiac tamponade. Hypothyroidism leads to decreased albumin production and increased capillary permeability leading to increased interstitial fluid and pericardial fluid accumulation. It is important to consider hypothyroidism as potential cause of pericardial effusion and evaluate all patients for thyroid dysfunction. Early thyroid hormone replacement can prevent the development and progression pericardial effusion and cardiac tamponade.

**CARDIAC TAMPOONADE: A FATAL COMPLICATION OF UNTREATED HYPOTHYROIDISM**


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10.1136/jim-2022-SRMC.116

**ARRHYTHMIAS IN CARDIAC SARCOIDOSIS: A CASE REPORT**


10.1136/jim-2022-SRMC.117

**Case Report**

As a multi-inflammatory disorder, sarcoidosis can present with multi-organ involvement. Cardiac involvement has been associated with a worse prognosis.

Patient is a 48-year-old female with hypertension, heart failure with preserved ejection fraction, and progressive sarcoidosis who presented with chest pain and atrial flutter. She underwent CTI ablation with amiodarone for rhythm control and placement of an implantable loop recorder for frequent premature ventricular complexes. Patient presented again a few months later for chest pain and subsequent cardiac arrest following an episode of ventricular fibrillation. Echocardiography at the time demonstrated preserved ejection fraction, left heart catheterization was negative for obstructive disease. Cardiac MRI revealed diffuse, patchy late gadolinium enhancement consistent with infiltrative disease. Patient then underwent an ICD placement. During follow up one year later patients repeat echocardiogram demonstrated reduction of ejection fraction to 20%. She was then referred for cardiac transplantation.

Cardiac sarcoidosis most often presents itself with conduc- tion abnormalities, heart failure, and sudden cardiac death. Early diagnosis of cardiac complications is vital for patient survival, with the ejection fraction as the most significant prognostic indicator. Although sarcoidosis itself is seen more commonly in women, cardiac involvement has been shown to be more prevalent in males. The cardiac complications are
caused by the formation of granulomas in the endocardium, myocardium, pericardium with patchy multifocal infiltration leading to conduction delays. Cardiac MRI and PET Scan can be used as a diagnostic modality to visualize the patchy hyper-enhancement consistent with cardiac sarcoidosis. Endomyocardial biopsy has been shown to be low yield given the patchy involvement of the disease. These patients will benefit from frequent follow up and placement of implantable cardiac defibrillators to prevent sudden cardiac death. This case aims to emphasize the importance of early involvement of an electrophysiologist. Close follow up and frequent risk assessment are pivotal for positive outcomes.

Abstract #119  A CASE OF WIDE COMPLEX TACHYCARDIA DUE TO SUPRAVENTRICULAR TACHYCARDIA WITH ACCESSORY PATHWAY
K Parmar*, T Nguyen, G Del Rio-Pertuz, E Elgwairi, M Abohelwa, D Swaminath. Texas Tech University Health Sciences Center, Lubbock, TX
10.1136/jim-2022-SRMC.119

Case Report  Wolff-Parkinson-White syndrome (WPW) is rare, with a prevalence of 0.07 percent. Up to 80% were atrioventricular reentrant tachycardia (AVRT), 15–30% were atrial fibrillation (AF) and 5% were atrial flutter.

Case presentation  A 16-year-old man with history of asthma presented to hospital for dizziness and palpitations that started from past one day after he played basketball. It was followed by multiple dizziness episodes throughout the night. Patient had family history of a cousin who passed away at the age of 26 years. Vitals were stable except heart rate 186 beats/min. Laboratory showed elevated troponin with flat trend. Electrocardiogram (EKG) showed irregular wide complex tachycardia concerning for either AF with WPW or ventricular tachycardia (figure 1). He was successfully cardioverted with 360J with reversion to sinus rhythm. Repeat EKG showed sinus bradycardia with delta waves suggestive of WPW. Transthoracic echocardiogram showed normal left ventricle ejection fraction. Mild concentric left ventricular hypertrophy, not consistent

Abstract #118  ELUSIVE MYOCARDITIS UNFOLDING AS CARDIogenic SHOCK
M Oye, N Maaliki*, B Al-Turk, W Aung. University of Florida Health Science Center Jacksonville, Jacksonville, FL
10.1136/jim-2022-SRMC.118

Case Report  A 43-year-old male presented in cardiogenic shock. He was obtunded, hypotensive, and in respiratory distress requiring intubation. Exam revealed bilateral lung crackles and cold extremities with lower limb edema. Echocardiography demonstrated an ejection fraction of 10% with global hypokinesis and a dilated left ventricle of normal thickness. Laboratory analysis showed elevated cardiac and inflammatory biomarkers and electrocardiogram displayed a left bundle branch block with no prior for comparison. A left heart catheterization ruled out coronary artery disease. Intravenous diuretics and Dobutamine were started. Workup was significant for elevated IgG titers to 4 serotypes of Coxsackievirus A. An endomyocardial biopsy was not accessible to confirm the presumed diagnosis of acute myocarditis. Empiric treatment was started with intravenous immunoglobulins (IVIG) and high-dose steroids. Over the ensuing weeks, he was weaned from inotropic support and guideline-directed medical therapy (GDMT) was introduced. Of note, he had suffered from fevers, malaise, and progressive dyspnea for the prior two weeks, which was attributed to COPD exacerbations.

Acute myocarditis can manifest as a cardiovascular disease within three months. Etiology is commonly viral, involving direct cytotoxic damage and antigen recognition inducing an inflammatory response. Symptoms can range from a subclinical presentation to acute heart failure. Laboratory analysis reveals inflammatory and cardiac biomarker elevation. TTE can demonstrate systolic dysfunction and a dilated left ventricle of normal wall thickness. The diagnostic gold standard is an endomyocardial biopsy, which is often not performed due to lack of access to an experienced interventionalist and the invasive nature of the procedure. Cardiac MRI has emerged as a reliable modality. Treatment includes diuresis and hemodynamic support. Immunosuppression has been a contested option and results have varied for myocarditis with positive viral serologies. IVIG has shown promise due to the antiviral and immunomodulatory effects with relatively low risk, but more studies are required.
with hypertrophic cardiomyopathy. Patient underwent successful ablation of the right posterior accessory pathway. On follow-up, one month later patient denied dizziness or any other complaints.

Discussion This case highlights the importance of cardioversion in patients with AF with WPW. The rate-slowing drugs for atrial fibrillation are not effective, and digoxin and the nondihydropyridine calcium channel blockers are contraindicated since blocking the AV node will promote conduction down the accessory pathway and may sometimes directly enhance the rate of conduction over the accessory pathway. Drugs that prolong the refractory period of the accessory connection such as procainamide or ibutilide are preferred if cardioversion is not possible in stable patients.

Case presentation

A 73-year-old man with past medical history of hypertension and hyperlipidemia presented with complaint of chest pain at rest which was sudden onset, substernal, radiating to the left arm and neck, associated with shortness of breath and diaphoresis. Physical examination was unremarkable. Vitals were stable. Electrocardiography and chest-xray were unremarkable. Troponin was normal. A left heart catheterization showed 50% ostial focal stenosis at first obtuse marginal branch of left circumflex and was otherwise normal. An echocardiogram showed normal systolic function without regional wall motion abnormalities. A 1 cm X 0.7 cm lesion seen attached on the left cusp of the aortic valve on the aortic side which appeared to have a stalk (figure 1). The mass was intermittently occluding the left main coronary artery. A TEE was done which showed the well circumscribed nodule measuring 0.8 X 0.7 cm on the left coronary cusp with a stalk. Patient was discharged and asked to follow up in 6–8 weeks, but he was lost to follow up.

Discussion Papillary fibroelastoma (PFE) range from 2 mm to 40 mm and are usually pedunculated (2). They can arise from the aortic or ventricular surface of the valves. Given the location of the tumor on the valve and echocardiographic features it was suspected that the patient had papillary fibroelastoma. However, a pathologic diagnosis could not be confirmed. Most common presentation is stroke or transient ischemic attack, and other times these are coincidental findings on echocardiography (3).

Conclusion Cardiac tumors are extremely rare malignancies, and this patient presented with an unusual hemodynamic complication, namely occlusion of the coronary artery.

#120 CARDIAC TUMOR PRESENTING AS CHEST PAIN: A RARE PRESENTATION

K Parmar*, K Ratheal, K Nugent, G Del Rio-Pertuz, E Elgwairi, M Abohelwa, P Sethi. Texas Tech University Health Sciences Center, Lubbock, TX

10.1136/jim-2022-SRMC.120

Case Report Primary cardiac tumors are rare found in only 0.02% of autopsies and most are non-malignant (1). Fibroelastomas are the most common valvular tumor with variable clinical presentation.

Case presentation A 73-year-old man with past medical history of hypertension and hyperlipidemia presented with complaint of chest pain at rest which was sudden onset, substernal, radiating to the left arm and neck, associated with shortness of breath and diaphoresis. Physical examination was unremarkable. Troponin was normal. A left heart catheterization showed 50% ostial focal stenosis at first obtuse marginal branch of left circumflex and was otherwise normal. An echocardiogram showed normal systolic function without regional wall motion abnormalities. A 1 cm X 0.7 cm lesion seen attached on the left cusp of the aortic valve on the aortic side which appeared to have a stalk (figure 1). The mass was intermittently occluding the left main coronary artery. A TEE was done which showed the well circumscribed nodule measuring 0.8 X 0.7 cm on the left coronary cusp with a stalk. Patient was discharged and asked to follow up in 6–8 weeks, but he was lost to follow up.

Abstract #120 Figure 1 Transthoracic echocardiography (TTE) showing possible tumor in systole and diastole (pointed by arrows). It is 1X0.7 cm echogenic lesion attached on the aortic valve on the aortic side. Vegetation and thrombus cannot be excluded

#121 A CASE OF GASTROINTESTINAL BLEEDING AND AORTIC STENOSIS: HEYDE SYNDROME

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10.1136/jim-2022-SRMC.121

Case Report Heyde syndrome is a triad of aortic stenosis, gastrointestinal (GI) bleeding from angiodyplasia, and acquired coagulopathy from relative von Willebrand (VW) factor deficiency (1). It is a rare disease that can be fatal if not promptly recognized and treated (2).

We present a case of a 73-year-old male with a history of severe aortic stenosis who presented with chest pain secondary to severe symptomatic anemia. No source of bleeding was found as he denied any other symptoms however fecal occult blood test was positive. Provided his history of aortic stenosis, Heyde syndrome was suspected and GI bleed workup was started promptly.

Esophagogastroduodenoscopy (EGD) revealed gastric angiodysplasia which was successfully treated with clipping. The patient did well after the procedure and hemoglobin stabilized. Echocardiography revealed aortic valve jet velocity 5.12 m/s consistent with severe aortic stenosis. The diagnosis of Heyde Syndrome was made and he was referred for aortic valve replacement, which is the first-line treatment for Heyde syndrome (2).

Heyde syndrome is a rare but potentially fatal disease and the diagnosis requires a high index of suspicion (1). Acquired VW factor deficiency and GI angiodyplasia are believed to result from shear stress forces of the stenotic aortic valve over large VW factor multimers, which results in cleavage of large VW factor multimers into smaller fragments. This interferes with inhibition of angiogenesis resulting in angiodyplasia. As VW factor normally carries and prolongs the half-life of coagulation factor VIII, this also reduces the half-life of coagulation factor VIII resulting in coagulopathy (3 4). Early diagnosis and treatment are very important as Heyde syndrome carries an excellent prognosis following aortic valve replacement (2).

Conclusion The abstract emphasizes the importance of ruling out Heyde syndrome in elderly patients presenting with anemia, especially with a history of aortic stenosis.

REFERENCES

Abstracts


Case Report

A 73-year-old man with past medical history of hypertension was evaluated for chest pain. Echocardiography revealed aortic valve jet velocity 5.12 m/s and mild mitral regurgitation. There was no evidence of deep vein thrombosis in the pelvis or upper extremities. Transthoracic echocardiogram (TTE) showed a thrombus of 2 cm. Transesophageal echocardiography confirmed the presence of a thrombus in the left atrium. The patient was started on argatroban. The patient was discharged home two weeks later with a normal life expectancy.

Tackling a Deadly Duo: A Case of Thrombotic Thrombocytopenic Purpura Causing Heart Failure and Stroke


10.1136/jim-2022-SRMC.124

Case Report

A 25-year-old man presented to the emergency department with chest pain and dyspnea. A 12-lead ECG showed atrial fibrillation. Transthoracic echocardiogram (TTE) revealed a left atrial thrombus. The patient was started on argatroban. The patient was discharged home two weeks later with a normal life expectancy.

A Case of Gastrointestinal Bleeding and Aortic Stenosis

SA Tanum*, N Ray, S Tasrim, MA Tamin, A Ray, T Naguib. Texas Tech University Health Sciences Center School of Medicine, Lubbock, TX

10.1136/jim-2022-SRMC.122

Case Report

A 64-year-old female with essential hypertension presented to the emergency department with progressive dyspnea at rest, orthopnea, and paroxysmal nocturnal dyspnea. She was discharged home two weeks earlier following three-vessel CABG without any clinical features suggestive of HIT.

The next day, the patient developed sudden onset weakness of her left upper extremity. Magnetic resonance imaging of the brain showed evidence of multiple right cerebral hemisphere embolic infarcts. Transesophageal echocardiography showed a left atrial thrombus. The patient was started on argatroban. The patient was discharged home two weeks later with a normal life expectancy.

Case Report

A 55-year-old man with a history of hypertension presented to the emergency department with chest pain. Transthoracic echocardiogram (TTE) revealed a left atrial thrombus. The patient was started on argatroban. The patient was discharged home two weeks later with a normal life expectancy.
optimum medical management. Heart failure due to TTP is rare and doubles the mortality rate. We report a case of a 51-year-old female with past medical history of hypertension who presented with right sided headache, left arm weakness and bilateral pedal edema for two days. On examination, vital signs were normal except tachycardia. Neurological exam was significant for mildly decreased grip strength of left hand. 2+ pitting edema was noted bilaterally up to mid shin. Cardiovascular examination was otherwise normal. Significant laboratory test results and trends are noted in Table 1. Computed tomography scan of her brain showed right parietal, frontal and cerebellar infarcts. No evidence of contractions concerning for vasculitis or large vessel obstruction noted on magnetic resonance angiography of head and neck. Electrocardiogram showed no acute ischemic changes and echocardiogram showed an ejection fraction reduced to 35% without any regional wall motion abnormalities. Myocardial perfusion SPECT did not show evidence of reversible ischemia. In light of worsening anemia and thrombocytopenia, peripheral smear was repeated and demonstrated dacrocytosis and red cell fragmentation. In presence of normal coagulation studies, our suspicion for TTP was high and upon testing, ADAMTS13 activity was remarkably decreased at 8%. No secondary cause of TTP was found and TTP specific therapy was initiated including plasma exchange, Rituximab and Caplacizumab. Patient was discharged after stabilization of platelet count. At subsequent follow up, she reported ongoing symptoms of heart failure and guideline directed medical therapy was optimized with a plan to repeat echocardiogram in three months.

Systolic dysfunction in TTP was initially reported in case reports with evidence of microthrombi in coronary vasculature noted on autopsy. Despite high mortality, a lot is not known about the natural history and pathophysiology of heart failure in TTP. Further investigation into optimum management, especially the role of newer TTP specific therapies in reducing the duration and severity of heart failure could help improve outcomes in this population. In our patient, early recognition of TTP allowed aggressive management with immunomodulators and plasma exchange which proved to be lifesaving.

Abstract #124 Table 1 Trend of significant laboratory values

<table>
<thead>
<tr>
<th>Lab value (reference range)</th>
<th>On admission</th>
<th>Peak/hadir (hospital day of peak/hadir value)</th>
<th>At discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>White blood count (3.6–9.5 x1000/ mcl)</td>
<td>7.7</td>
<td>19.65 (day 7)</td>
<td>14.63</td>
</tr>
<tr>
<td>Hemoglobin (12–15 g/dL)</td>
<td>13.1</td>
<td>8.7 (day 10)</td>
<td>9</td>
</tr>
<tr>
<td>Platelet (150–450 x1000/mcl)</td>
<td>60</td>
<td>14 (day 5)</td>
<td>544</td>
</tr>
<tr>
<td>Blood urea nitrogen (6–20 mg/dL)</td>
<td>11</td>
<td>48 (day 9)</td>
<td>24</td>
</tr>
<tr>
<td>Creatinine (0.4–1 mg/dL)</td>
<td>0.8</td>
<td>2.5 (day 9)</td>
<td>1</td>
</tr>
<tr>
<td>Troponin (</td>
<td>1</td>
<td>4.81 (day 6)</td>
<td>– (0.77 on day 8)</td>
</tr>
<tr>
<td>Total bilirubin (0.2–1.2 mg/dL)</td>
<td>1</td>
<td>2.1 (day 5)</td>
<td>0.4</td>
</tr>
<tr>
<td>LDH (100–248 IU/L)</td>
<td>580</td>
<td>1060 (day 5)</td>
<td>198</td>
</tr>
<tr>
<td>Haptoglobin (30–200 mg/dL)</td>
<td>&lt;2.6</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>ADAM-TS31 activity (≥70%)</td>
<td>–</td>
<td>8% (day 5)</td>
<td>–</td>
</tr>
</tbody>
</table>
Endocrinology and metabolism
Joint plenary poster session and reception
4:30 PM
Thursday, February 10, 2022

Case Report Post-RYGB hypoglycemia has become increasingly recognized, as either noninsulinoma pancreaticogenic hypoglycemia syndrome (NIPHS) or late dumping syndrome. Post-RYGB hyperinsulinemic hypoglycemia can be diagnosed with the appropriate clinical criteria: symptoms developing ≥1 year after RYGB and occurrence of hypoglycemia with autonomic and/or neuroglycopenic symptoms after a high carbohydrate mixed meal. In contrast to hyperinsulinemic hypoglycemia (NIPHS/late dumping syndrome), adrenal insufficiency has been reported only rarely post-RYGB. We present a case further documenting the natural history and treatment of adrenal insufficiency in what first appeared to be hyperinsulinemic hypoglycemia. A 52-year-old female with BMI 40 and Type 2 DM underwent a RYGB procedure; six years later she developed hypoglycemic symptoms without neuroglycopenia that occurred mainly after meals. She would record blood sugars as low as 57 by glucometer when she felt shaky, sweaty, and weak. She was initially diagnosed with NIPHS and treated with diet therapy and acarbose, but her symptoms and documented hypoglycemia did not improve. Of note, she had had a Cortrosyn stimulation test two years earlier with 30 min and 60 min cortisol levels of 21.9 mcg/dl and 26.1 mcg/dl, respectively, indicating normal adrenal function at that time when she was asymptomatic in terms of hypoglycemic symptoms. However, because the patient had developed new symptoms of hypoglycemia and increased fatigue, which did not improve with standard therapy for NIPHS, a Cortrosyn test was repeated; hypoadrenalism was found with 30 min and 60 min stimulated cortisol levels of 14.5 mcg/dl and 15.9 mcg/dl, respectively. The diagnosis of hypoadrenalism was confirmed by a third Cortrosyn test six weeks later, with cortisol levels at 30 min and 60 min of 14.4 mcg/dl and 17.0 mcg/dl, respectively. Treatment with hydrocortisone 10 mg twice daily was initiated, and the patient had a significant clinical improvement; she reported more alertness and much more energy with only occasional episodes of hypoglycemic symptoms. NIPHS is increasingly recognized as a problem following gastric bypass surgery. It is a known complication of RYGB and can occur months to years after the procedure. NIPHS is diagnosed in approximately 10–15% of individuals who have undergone gastric bypass surgery, and it is more common in women. Adrenal insufficiency associated with NIPHS has not been extensively investigated. A proposed mechanism for hypoadrenalism in NIPHS has been prolonged hypothalamic exposure to severe hypoglycemia resulting in some form of resistance syndrome and secondary hypoadrenalism. Clinicians should be aware of the possible co-existence of hypoadrenalism with NIPHS and the advisability of a Cortrosyn test in this context.

Introduction A sodium-glucose cotransporter 2 inhibitor (SGLT2i), empagliflozin, was recently approved for add-on treatment of type II diabetes mellitus (DM) due to its proven cardiovascular benefit. Euglycemic diabetic ketoacidosis (DKA) is a rare life-threatening complication associated with empagliflozin. Glucosuria and subsequent osmotic diuresis, leading to a state of dehydration and decreased insulin production, are proposed underlying pathogenesis. An imbalance between glucagon and insulin then promotes lipolysis and ketogenesis.

Case presentation A 32-year-old female patient with morbid obesity was admitted to our facility with tibial plateau abscess and infected hardware which was placed after traumatic tibial plateau fracture three years earlier. She underwent debridement and hardware removal. A new diagnosis of diabetes mellitus was made due to hemoglobin A1c of 10.2%. None of the diabetic symptoms were reported. Random plasma glucose was 263 mg/dL. Insulin therapy was offered, but patient refused. Initially, she was commenced on sitagliptin and empagliflozin. The following day, sitagliptin was withheld as plasma glucose responded well and she was encouraged to lose weight and lifestyle modification. Only empagliflozin was continued due to its weight loss advantage. Unfortunately, she rapidly developed severe euglycemic DKA.

Laboratory investigation revealed leukocytosis (13,250 cells/μL) and thrombocytopenia (platelet 523,000/μL). A combination of high anion gap (AG) and normal AG metabolic acidosis was noted as evidenced by serum bicarbonate 5 mmol/L, elevated serum acetone, AG 23, and delta ratio 0.6. Urinalysis revealed ketonuria, and massive glycosuria (>500 mg/dL). Plasma glucose was 120 mg/dL. Empagliflozin was discontinued and treatment for DKA with aggressive fluid replacement and regular insulin drip was initiated. Resolution of DKA was achieved after three days and bridging therapy was successful.

Conclusion Euglycemic DKA can develop early after initiating the first dose empagliflozin. The administration of SGLT2i in acutely-ill patient is associated with higher risk of this complication; therefore, close monitoring is mandatory. Switching to insulin-based therapy may be appropriate in patients, who chronically taking SGLT2i, with acute illness requiring hospitalization. To date, whether discontinuation of dipeptidyl peptidase 4 inhibitor, which also regulates insulin/glucagon balance, in patients taking SGLT2i contributes to DKA remains unknown.
Case Report Insulinomas are pancreatic endocrine tumors most commonly identified at the median age of 51–55 years. Hypersecretion of insulin is characteristically accompanied by neuropathy, autonomic dysfunction, and by a constellation of clinical symptoms (the “Gas light” syndrome). They are the most common cause of fasting hypoglycemia. Diagnosis is based on medical history, laboratory evaluation, and imaging studies. Most insulinomas are sporadic, but familial cases are known to occur. The authors present a case report of a 47-year-old female patient who presented with symptoms suggestive of hypoglycemia, including episodes of dizziness, confusion, and sweating. Laboratory evaluation revealed low serum glucose levels with normal insulin levels, consistent with insulinoma. Imaging studies confirmed the presence of an insulinoma in the body of the pancreas. The patient underwent surgical resection, and pathologic examination confirmed the diagnosis of an insulinoma. The patient has been asymptomatic since surgery. This case highlights the importance of considering insulinoma in the differential diagnosis of hypoglycemia and the efficacy of surgical intervention in managing this condition.
treated with intravenous palmitonate 60 mg, calcitonin 4 units/kg every 12 hours for 4 doses, and fluid hydration. DEXA scan was normal a month prior. Further laboratory evaluation also showed elevated Immunoglobulin A (IgA), with monoclonal protein IgA kappa type with free kappa light chains and elevated IgA kappa in the urine. Skeletal survey showed multiple small focal lytic bone lesions replacing normal hematopoiesis. A bone marrow biopsy was markedly hyper-cellular with sheets of kappa restricted plasma cells replacing normal hematopoiesis. She was diagnosed with stage 3 IgA kappa multiple myeloma (MM) and was started on chemotherapy as well as on Cinacalcet 30 mg twice a day for PHPT. Her Ca level normalized to 9.6 mg/dL before discharge with symptoms resolved.

Discussion While prevalence of PHPT and MM increases with age, increasing the chance of both occurring together in one patient, this is very rare with only a few cases reported in the literature. Moreover, one study suggested that the prevalence of monoclonal gammopathies is higher than expected in patients with surgically proven PHPT. The mechanism is unclear, but it is hypothesized that the elevated PTH may mediate the induction of MM through the downstream biological effects of IL-6. In our case, with profound hypercalcemia, renal failure, and MM, intact parathyroid hormone was not sufficiently suppressed which is consistent with underlying PHPT being at least partially responsible for the high Ca. To conclude, our case demonstrates that two pathological processes causing hypercalcemia do, in fact, sometimes coexist; understanding of the underlying pathologies will help target the appropriate therapeutic approach.

### Abstracts

#### #132 CIRCULAR HYPERTHYROIDISM IN NODULAR THYROID DISEASE

B Mohanakrishnan, KG Holder, R Waqas, H Wiemer. Texas Tech University Health Sciences Center, Amarillo, TX; Texas Tech University Health Sciences Center School of Medicine, Amarillo, TX

10.1136/jim-2022-SRMC.132

**Learning Objective** To interpret the TSH, fT3/fT4 and correlate with symptoms in Cyclic Hyperthyroidism.

**Case presentation** A 39-year-old healthy woman presented with anxiety, hair thinning, weight loss, and appetite suppression since her pregnancy in September of 2019. One month after giving birth, she began experiencing occasional hot flashes but denied any other symptoms. In November 2019, she was suspected of hyperthyroidism due to worsening of her initial symptoms, and her preliminary thyroid profile showed a TSH of 0.006 uIU/ml and an fT4 of 1.2 ng/dl. She was referred to an endocrinologist for further care, and her subsequent thyroid profile with symptoms variations can be found in the table. The follow-up clinical and laboratory data interpreted that the patient had cyclic features of hyperthyroidism with sporadic intervals of asymptomatic periods without any medical treatment. I-123 uptake displayed a euthyroid state with uptake in the normal range at 4 and 24 hours. On the scan, multiple nodules, both hot and cold, were observed throughout the gland. This pattern is consistent with multinodular goiter and the possibility of clinical hyperthyroidism from August to October 2020. I-131 thyroid ablation was performed in August 2021, and three weeks follow-up revealed that the patient was asymptomatic with a significantly suppressed TSH and a normal range of fT3 1.4 pg/ml and fT4 0.6 ng/dL. All labs were performed in the Texas Tech laboratory.

**Discussion** Patient with symptoms of thyrotoxicosis and significantly suppressed TSH with an elevated free T4 immediately makes us think of T3-toxicosis; knowing the very short half-life of T3, the 6–7-day half-life of T4, and the 2–3 months half-life for TSH can explain why the patient’s thyroid function tests can be confounding in Cyclic Hyperthyroidism compared to the patient’s clinical picture. A literature review revealed that Cushing Syndrome, another cyclic glandular disease affecting the Adrenals with similar hormonal cyclic patterns, has unclear pathophysiology. In this case, the likely explanation for these Cyclic Thyrotoxicosis features may be explained by the inconsistent hormonal secretions from hot nodules. The hot nodules generally overproduce triiodothyronine (T3) relative to T4, causing T3-toxicosis. As the nodules die off and become ‘cold’ nodules, free T3/T4 returns to the normal reference range with symptom tenacity in spite of TSH remaining suppressed. By our review of the literature, this is a new phenomenon, and no similar cases of Cyclic Hyperthyroidism have been reported.

**Conclusion** Diagnosing a Cyclic Hyperthyroidism depends on thyroid function tests that may exhibit cycling TSH, fT3, and fT4 levels compared to the patient’s symptoms. T3 toxicosis may likely correspond to the phase of the hot nodular activity and can be confirmed by elevated fT3. Close follow-up is essential for monitoring patient symptoms and the thyroid function test until definitive diagnosis.

#### #133 A CASE OF PHEOCHROMOCYTOMA IN A 29-YEAR-OLD WOMAN WITH NON-CLASSICAL PRESENTATION AND NEOPLASTIC PATHOLOGICAL FEATURES

N Mon*, S Usala. Texas Tech University Health Sciences Center School of Medicine Amarillo, Amarillo, TX

10.1136/jim-2022-SRMC.132

**Case Report** A 29-year-old woman presented to the ER with a complaint of severe constipation associated with abdominal and back pain. An abdominal CT with contrast revealed an enhancing left adrenal mass, 7.9 x 7.3 x 5.4 cm. An adrenal core and FNA biopsy showed small clusters of modestly pleomorphic cells with evidence of neuroendocrine differentiation in a broadly fibrotic background which were strongly and diffusely positive for chromogranin A, consistent with native adrenal medullary cells vs pheochromocytoma. There was hemodynamic instability following the biopsy. Initial hormonal data was consistent with a pheochromocytoma: urinary metanephrines 10,836 mcg/24 hr (94–604), urinary epinephrine <5 mcg/24 hr, urinary norepinephrine 966 mcg/24 hr (15–100), total urinary epinephrine and norepinephrine 966 mcg/24 hr (26–121), urinary dopamine 422 mcg/24 hr (52–480).

She was referred to the endocrine clinic for further evaluation and preoperative treatment. Her chief complaints were forgetfulness and ‘sleeping and eating’ a lot. She did not report headaches as a problem, but did admit to headaches, sweating and hot flashes at times. She denied any spells. There was no family history of hypercalcemia, parathyroid tumor, pituitary tumor or thyroid cancer. Initially she demonstrated orthostatic changes with HR 66, SBP 128 sitting and HR 102, SBP 112 standing. The labs via the endocrine clinic revealed plasma metanephrine <25pg/ml(<57), plasma
nificant for 24-hour urine calcium of 162 mg/24-hour, ran-
uel ultrasound revealed a hypoechoic lesion abutting the infe-
tests were within normal limits. She was started on a nor-
1.38 ng/dL respectively. Serum creatinine and liver function
ized treatment options. This case illustrates the evaluation,
rare. Acute hypercalcemia in the setting of pregnancy has lim-
Primary hyperparathyroidism in pregnancy is very
admitted to Medical Intensive Care Unit where he was started
sage glucose co-transporter 2 inhibitor (SGLT2i), and hyper-
type 2 diabetes Mellitus. Euglycemic diabetic ketoacidosis (eu-
 precipitate decompensation of chronic diseases such as
the 61-year-old man Puerto Rican male
2.00/1.00 mmHg and 85 beats/min. Physical examination was
leptin level 48.3 ng/mL was increased. He was admitted to the
amite, and a calculated fractional excretion of calcium was low at 0.007.
Serum calcium improved to 11.8 mg/dL with IV hydration. She was evalu-
what was concerning for high malignancy risk. Given her young age and the neoplastic features on pathology, genetic
testing is indicated in this case.

Primary hyperparathyroidism in a pregnant patient requires careful management. This case illustrates the evaluation, workup, and treatment of hypercalcemia related to primary hyperparathyroidism in a pregnant patient. The patient was a 25-year-old woman who presented to the hospital with chief complaint of fever, chills, dry cough, and general malaise. Physical examination revealed hazy groundglass opacities. Considering mentioned findings, the patient was started on an airborne isolation precautions and was managed in the Emergency Room with chief complaint of fever, chills, dry cough, and general malaise. Home medications included Empagliflozin. The patient presented to the Emergency Room again after returning from a recent family trip to Florida. Home medications included Empagliflozin. The patient had a recent travel to Florida (United States) and was in contact with a family member infected with COVID-19 infection. Physical examination was remarkable for dry oral mucosa and laboratories showed a metabolic acidosis with a high anion gap of 20 mM/L and a marked increase in plasma b-hydroxybutyrate of 57.8 mg/dL and a central glucose <300 g/dL. Patient tested positive for COVID-19 infection. Chest X-ray showed bilateral scattered peripheral hazy groundglass opacities. Considering mentioned findings, the patient was placed on airborne isolation precautions and was admitted to Medical Intensive Care Unit where he was started on DKA protocol with continuous intravenous regular, D5W.
and aggressive hydration. Medical therapy also included Remdesivir and Dexamethasone. Patient improved after 2 days with resolved eu-DKA. Patient transferred to Internal Medicine Ward.

Conclusion Eu-DKA has been seen in patients using SGLT2i and with COVID-19 infection; several cases described in literature are suggestive of a specific association between these factors. Our case also highlights the importance of early recognition and management of euglycemic DKA in patients using SGLT2i infected with COVID-19, both increase the risk of dehydration. Physicians must be aware and identify this patients earlier in outpatient setting and be more aggressive in hydration, maintaining euvoletic status to avoid admission to Intensive Care Unit.

**#136 LEYDIG CELL TUMOR LEADING TO PERIPHERAL PRECOCIOUS PUBERTY IN A 6-YEAR-OLD BOY**

N Tantivit*, W Lim. University of South Alabama, Mobile, AL

10.1136/jim-2022-SRMC.135

**Learning Objective** To report a rare case of peripheral precocious puberty in a 6-year-old boy.

Case 6 years old male with no significant past medical history presented with concern of pubic hair, prominent facial hair, voice change, enlargement of testis and growth spurt for 9 months. There was no exposure to any form of testosterone at home. Physical exam demonstrated pubic hair at Tanner 3, and testes at Tanner 2. Labs were done and showed elevated testosterone with suppressed follicular stimulating hormone and luteinizing hormone level which made the diagnosis of peripheral precocious puberty. Testicular ultrasound revealed enlarged right testicle and CT pelvis showed hypervascular 1 cm right testicular mass without definitive evidence of metastatic disease. Patient underwent right radical orchiectomy and pathology report showed Leydig cell tumor. Due to limited testicular involvement, chemotherapy was not required. Repeated testosterone level post-surgery was low.

**Discussion** Precocious puberty is uncommon in males, and peripheral precocious puberty is much less frequent than central precocious puberty. About 1.25–4% of reported peripheral precocious puberty in male patients are due to Leydig cell tumors. Leydig cell tumors (LCT) are rare stromal tumors of the testis. Classically, LCT presents with testicular mass (90%) and precocious puberty (10%) such as sudden external genital growth, pubic hair growth, accelerated skeletal and muscle development, and mature masculine voice. Since LCT are non germ cell tumors, they do not cause elevation of alpha feto-protein or beta-human chorionic gonadotrophin. More than 90% of LCT are benign and these tumors can be treated with surgery. Radical inguinal orchieotomy is the treatment for LCT. Due to the benign nature, testes-sparing surgery with regular follow-up also appears to be safe management.

Conclusion Leydig cell tumor is a non germ cell tumor that can lead to peripheral precocious puberty in boys.

**Abstract #137 A CASE OF ADRENAL INCIDENTALOMA WITH UNCHARACTERISTIC IMAGING FINDINGS AND SUBCLINICAL CUSHING SYNDROME**

J Turner*, The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2022-SRMC.136

**Case Report** The patient is a 65-year-old Caucasian male with a past medical history of right adrenal incidentaloma, cirrhosis secondary to hepatitis C virus and alcohol abuse, hepatitis C infection status post treatment with sustained viral remission, congestive heart failure with reduced ejection fraction, chronic obstructive pulmonary disease, vitamin D deficiency, gastroesophageal reflux disease, and depression with

<table>
<thead>
<tr>
<th>Abstract #136 Table 1</th>
<th>Laboratory results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At Diagnosis</strong></td>
<td><strong>Post Right Orchiectomy</strong></td>
</tr>
<tr>
<td>FSH</td>
<td>0.005 mIU/ml (low)</td>
</tr>
<tr>
<td>LH</td>
<td>0.047 mIU/ml (low)</td>
</tr>
<tr>
<td>Testosterone</td>
<td>296 ng/dL (High)</td>
</tr>
<tr>
<td></td>
<td>&lt; 7 ng/dL (normal)</td>
</tr>
<tr>
<td>DHEA</td>
<td>41 ng/dL (normal)</td>
</tr>
<tr>
<td>Beta-HCG</td>
<td>&lt; 1 unit/L (normal)</td>
</tr>
<tr>
<td></td>
<td>&lt; 1 unit/L (normal)</td>
</tr>
<tr>
<td>APP</td>
<td>1.8 ng/ml (normal)</td>
</tr>
<tr>
<td></td>
<td>&lt; 1.3 ng/ml (normal)</td>
</tr>
<tr>
<td>ALP</td>
<td>431 unit/L (normal)</td>
</tr>
<tr>
<td>TSH</td>
<td>3.53 mIU/ml (normal)</td>
</tr>
<tr>
<td>FT4</td>
<td>1.07 ng/dL (normal)</td>
</tr>
</tbody>
</table>

**Abstract #136 Figure 1**

**Abstract #137 Figure 1** Right Adrenal Incidentaloma
Abstract #137 Table 1  Results of 1 mg overnight dexamethasone suppression test

<table>
<thead>
<tr>
<th>Cortisol: 11.8 mcg/dL</th>
<th>Dexamethasone: 511 ng/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cortisol: 14.0 mcg/dL</td>
<td>Dexamethasone: 248 ng/dL</td>
</tr>
</tbody>
</table>

Labs were collected at approximately 08:00 AM.

psychosis who presented to the Endocrinology Clinic for evaluation of a right adrenal incidentaloma. He feels well, and he has no new complaints at this visit. The patient was originally discovered to have an adrenal nodule 6 years ago on an MRI of his abdomen. CT of the Abdomen performed several years later showed that the nodule had grown from 1.8 cm to 2.9 cm. The density of the nodule was heterogeneous and described as greater than 10, and its delayed contrast washout was not greater than 50%. MRI findings described a 50% loss of signal on out of phase as opposed to in phase T1-weighted imaging. The consensus across multiple imaging studies was that this incidentaloma’s imaging characteristics were consistent with but not characteristic of adrenal adenoma. Functional testing was performed in the Endocrinology clinic. Assessment for primary aldosteronism and pheochromocytoma were unremarkable. 1 mg overnight dexamethasone suppression tests on two separate occasions did not suppress AM cortisol levels. Dexamethasone levels were also collected to verify that dexamethasone was taken appropriately by the patient. 24-hour urinary free cortisol was also elevated. The patient does not exhibit signs or symptoms of Cushing Syndrome. He was referred to Endocrine Surgery for evaluation, and he has been scheduled for laparoscopic adrenalectomy.

Gastroenterology and nutrition and dietary Supplements

Joint plenary poster session and reception
4:30 PM

Thursday, February 10, 2022

AN UNUSUAL PRESENTATION OF SMALL BOWEL INTUSSUSCEPTION DUE TO AN ADENOMATOUS POLYP

CJ Chinchilla Putzey*, AM Ponnambalam. University of South Alabama, Mobile, AL

Two weeks before admission an upper endoscopy revealed esophagitis, duodenitis, and gastritis, and the biopsies were consistent with the endoscopy findings. She was started on cyproheptadine and pantoprazole for possible cyclic vomiting syndrome but the symptoms persisted. She was admitted for worsening symptoms.

On physical examination, she was dehydrated, tachycardic, with a heart rate of 125–130 bpm. Abdomen was soft, non distended with no guarding or rebound tenderness. Lab investigations were significant for hyponatremia, hyperglycemia, hypomagnesemia, hypophosphatemia, and lactic acidosis. Abdominal ultrasound was within normal limits. She continued to experience abdominal pain and vomiting and a CT abdomen with contrast was obtained. This revealed thickened, long segment intussuscepted loop of small bowel and heavy stool burden. Upper GI series showed a dilated loop of small bowel with contrast not passing through, indicative of partial small bowel obstruction.

She underwent diagnostic laparoscopy with reduction of the proximal jejunal intussusception. Upon reduction, a large intra-luminal mass was identified 10 cm distal to the ligament of Treitz. The bowel was run through and no additional masses were palpable. Biopsy of the mass revealed tubulovillous adenoma with focal high-grade dysplasia. A repeat upper endoscopy 3 months later was within normal limits. Genetic testing was negative for any genetic predisposition to intestinal polyps.

Tubulovillous adenoma is a polyp protruding into the digestive tract lumen that has around 50% villous and tubular contents respectively. These polyps are capable of progressing to malignancy. Small bowel intussusception is usually an incidental finding diagnosed on imaging and usually reduces spontaneously. Most common sites are ileocolic and ileoileal. Around 75% of all childhood intussusception is considered to be idiopathic. Other causes include rotavirus vaccine, adenovirus infection, bacterial enteritis, and development of a lead point secondary to Meckel diverticulum, polyps, hematomas or vascular malformations. Adenomatous polyps leading to small bowel intussusception are rare in children.

#139 SPONTANEOUS PERITONEAL DRAINAGE FOLLOWING PARACENTESIS IN A HOSPITALIZED PATIENT

MA Elmasry*, B Songtanin, M Abdelnabi, J Benjanuwattra, S Sanchez, M Faragallah, S Rau, C Peterson, K Nugent. Texas Tech University Health Sciences Center, Lubbock, TX

Introduction The median survival of decompensated cirrhotic patients without transplantation is approximately two years. Repeated large volume paracentesis with albumin administration is the first line treatment for refractory ascites. Previous studies showed the benefit of long-term peritoneal drainage in minimizing frequent hospitalization and reducing cost.

Case summary A 36-year-old man with a past history of alcohol abuse with decompensated liver cirrhosis (Child Pugh Class C), hypertension, and depression, presented to the hospital with an altered mental status and was diagnosed with hepatic encephalopathy and acute kidney injury. Vital signs on admission were normal except for tachycardia. Physical examination showed confusion, jaundice, and icteric sclerae. Gastrointestinal examination showed tense
Abstract #139 Table 1 Improvement of renal functions during patient’s hospital course

<table>
<thead>
<tr>
<th>Hospitalization Days</th>
<th>Drainage (ml/24 h)</th>
<th>Urine Output (ml/24 h)</th>
<th>Albumin (gm/dL)</th>
<th>BUN (gm/dL)</th>
<th>Creatinine (gm/dL)</th>
<th>Creatinine Difference (gm/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paracentesis initiated</td>
<td>450</td>
<td>2.9</td>
<td>28</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Catheter blocked and removed Spontaneous drainage</td>
<td>400</td>
<td>2.6</td>
<td>34</td>
<td>2.6</td>
<td>+0.4</td>
</tr>
<tr>
<td>3</td>
<td>3950</td>
<td>811</td>
<td>2.6</td>
<td>42</td>
<td>3.3</td>
<td>+0.7</td>
</tr>
<tr>
<td>4</td>
<td>3100</td>
<td>650</td>
<td>3.1</td>
<td>35</td>
<td>2.4</td>
<td>-0.9</td>
</tr>
<tr>
<td>5</td>
<td>1375</td>
<td>950</td>
<td>3.4</td>
<td>23</td>
<td>1.2</td>
<td>-1.2</td>
</tr>
<tr>
<td>6</td>
<td>1300</td>
<td>1000</td>
<td>3.0</td>
<td>13</td>
<td>0.7</td>
<td>-0.5</td>
</tr>
<tr>
<td>7</td>
<td>1500</td>
<td>1200</td>
<td>2.7</td>
<td>10</td>
<td>0.7</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Ascites with fluid wave, mid-abdominal tenderness, and dullness on percussion. He also had bilateral leg swelling up to mid-tibial level. His MELD-Na on admission was 36 (65–66%), estimated 90-day mortality and Serum-Ascites Albumin Gradient (SAAG) was 2.7 gm/dL consistent with portal hypertension. Paracentesis was performed, and the ascites fluid was a transudate. A peritoneal drainage catheter was removed after 72 hours of insertion due to blockage in the peritoneal catheter. Surprisingly, peritoneal fluid continued to leak at the insertion site. A urostomy bag was placed over the puncture site, allowing peritoneal fluid to drain for 7 days. His kidney function improved after the continuous drainage started (Table).

**Conclusion** Continuous peritoneal drainage in this case provided unexpected benefits, including significant removal of ascitic fluid and improvement in renal function. Continuous peritoneal drainage might be considered in other hospitalized patients with large volumes of ascitic fluid causing important clinical effects.

#140 VIRTUAL REALITY AND MINDFULNESS TECHNIQUE IN THE TREATMENT OF RUMINATION SYNDROME: A CASE REPORT

M Esteban*, S Cherukuri, TQ Dang, K Espino, C Didia, A Dwivedi, R McCallum. Texas Tech University Health Sciences Center, El Paso, TX

10.1136/jim-2022-SRMC.139

**Introduction** Virtual reality (VR) offers immersive, realistic, three-dimensional experiences that let users experience audio and visual environments of guided relaxation. Multiple studies have proven its effectiveness in reducing pain and anxiety in both adults and children. We report a patient with Rumination Syndrome who underwent a treatment program of VR and Mindfulness technique leading to marked symptom improvement related to abdominal pain, nausea, vomiting.

**Case Report** A 24-year-old Hispanic female with a past medical history of hypothyroidism who initially presented to the GI Motility clinic with a six-month history of epigastric pain and post-prandial nausea and vomiting occurring within 15 minutes of ingesting a meal and even water. Laboratory findings were unremarkable. An upper endoscopy was normal except for mild gastritis, pathology showed H. pylori was negative and a gastric emptying study was normal. Given this rather ‘classic’ clinical presentation, she was diagnosed with Rumination Syndrome. Patient was started on Omeprazole, Promethazine, Dicyclomine and Amitriptyline with some improvement but not resolution of symptoms. After discussion with patient, she decided to be enrolled in our ongoing IRB approved program using VR and Mindfulness techniques in the management of refractory gastrointestinal disorders. Patient completed baseline Patient Assessment of Gastrointestinal Disorders Symptom Severity Index (PAGI-SYM) questionnaire in which her score was 77 out of a possible 110.

She underwent a total of 16 VR (2/Week) and 8 Mindfulness (2/Week) sessions in a span of 8 weeks. She also continued mindfulness exercises at home once the final treatment session was completed. No medication changes were made during the duration of the sessions. Patient was asked to answer the PAGI-SYM questionnaire at 2 week intervals and her scores showed continued improvement: such that her score at 8 weeks was 10 (85% improvement) specifically involving changes in 12 symptoms. No adverse side effects from both the VR and mindfulness technique sessions were reported by the patient.

**Conclusions** Managing Rumination Syndrome and other functional gastrointestinal disorders can be a challenge even to the most seasoned gastroenterologist. Often, medical pharmacology is insufficient in controlling symptoms. A good working relationship and rapport between the physician and patient is the first key to therapy. We have demonstrated that combining sessions of VR and Mindfulness technique is a very effective and safe tool in managing patients with the Rumination Syndrome symptoms of nausea, vomiting and abdominal pain refractory to standard therapy. We are continuing our study at our institution and we aim to apply this approach to other upper gastrointestinal disorders such as gastroparesis, Irritable Bowel Syndrome, Chronic Functional Abdominal Pain and refractory nausea.

#141 DECOMPENSATED LIVER CIRRHOSIS OCCURRING IN HETEROZYGOUS ALPHA 1 ANTITRYPSIN DEFICIENCY

S Gandu*, A Vasikaran, S Pandit. LSU Health Shreveport, Shreveport, LA

10.1136/jim-2022-SRMC.140

**Case Report** Alpha 1 Antitrypsin deficiency (AATD), is an autosomal co-dominant disorder occurring in individuals who inherit an abnormal A1AT gene from each parent. Over 120 different alleles have been associated with this gene, of which the three most common are Z, S, and M. The Z and S allele are the abnormal variants, associated with severely and moderately reduced production of normal A1AT protein respectively. The prevalence of the Z allele is increasingly present in Caucasians, with males seemingly more affected than females. The typical presentation of adults with severe AATD associated with liver disease; chronic hepatitis, cryptogenic cirrhosis, and decompensated liver disease is commonly associated with the PiZZ variant. This toxic ‘gain of function’ mutation causes an accumulation of the abnormal A1AT, overwhelming the hepatocytes...
resulting in an apoptosis-driven liver cell injury. There exists profound variability in the clinical presentation of A1AT deficient patients. As patients with the ZZ variant may present in infancy or adulthood. Additionally, variability may be related to socio-environmental risk factors and disease modifiers like smoking, allele variability, and hormonal effects. Here we have a patient diagnosed with cryptogenic cirrhosis of the liver upon biopsy, incidentally, found to have reduced serum A1AT levels with the MZ phenotype. There are multiple unique aspects to this case. The patient is a 48-year-old Caucasian woman with no past medical history, non-smoker, that denied alcohol consumption, illicit drug use, devoid of any pulmonary symptoms. She presented after a hysterectomy which was complicated by bleeding and was found to have mildly elevated serum aminotransferase levels. While undergoing evaluation for liver cirrhosis evidenced by ascites and hepatic encephalopathy, leading to this diagnosis.

### DELAYED PRESENTATION OF HIRSCHSPRUNG’S DISEASE

K Glisson*, C LeBlanc. Louisiana State University, Baton Rouge, LA

10.1136/jim-2022-SRMC.141

#### Case Report

Hirschsprung’s disease (HD) is a disorder characterized by the failure of ganglion cell precursors to migrate into the bowel in utero, leading to aganglionosis in the submucosal and myenteric plexus. 95% of patients with HD fail to pass meconium within the first few days of life. Other typical clinical features include abdominal distension, bilious vomiting, enterocolitis, feeding intolerance, and failure to thrive. Establishing a diagnosis is important as this is a condition with mortality rates of 2%-5% have been reported despite advances in care. The following is a case of HD that lacked many of the classic historical features and exam findings at initial presentation and contributed to a delay of diagnosis and definitive surgical management.

A 16-month-old infant male presented to the pediatric gastro intestinal clinic with constipation. He was seen previously at 8 months of life for the same concern, but failed to attend scheduled follow-ups. At the first visit, parents reported that the patient had a bowel movement within the first 24 hours of life, normal bowel movements for the first 2 months of life, normal newborn screening, a reassuring exam and his weight was in the 70th percentile. Treatment for constipation was recommended at the initial visit. However, at the 16 month visit parents reported minimal symptomatic improvement.

The patient was admitted for further evaluation of his constipation. His initial exam was significant for a distended, non-tender abdomen with a palpable mass in the lower abdomen. Digital rectal examination revealed good rectal tone with no palpable stool and a tight anal sphincter. His initial abdominal plain film showed abundant stool. A subsequent barium enema revealed a narrow rectum that transitioned to a severely enlarged, fecal impacted sigmoid colon. The patient underwent a rectal suction biopsy which confirmed his diagnosis of HD. The patient underwent a diverting colostomy with no post-operative complications.

Constipation is a common general pediatrics issue. It is estimated to be the cause of 3–5% of all visits to pediatricians. Functional constipation is responsible for over 95% of these visits. This case highlights that although constipation in this age group is frequently functional, diseases such as HD can present outside of the classic age range and with a lack of red flag symptoms for gastrointestinal pathology. While 80% of HD patients present in the first few months of life, it should remain on the differential diagnosis for constipation as up to 15% of the cases remain undiagnosed until the age of 5 years.
0.6% of all diagnosed cancers in the USA. This case demonstrates the potential of missing a rare and deadly gastrointestinal malignancy from vague and nontraditional clinical symptoms.

Conclusion We conclude that, although rare, a small bowel carcinoma must be kept in mind when working up patients presenting with vague, chronic abdominal pain. As most reported adenocarcinomas with small bowel origin are diagnosed late, and the prognosis is poor, early recognition of small bowel adenocarcinoma is crucial and lifesaving.

#144 ANOTHER SHERLOCK HOLMES MYSTERY: ABDOMINAL PAIN EXPLAINED BY MEDIAN ARCULATE LIGAMENT SYNDROME
AJ Ortega*, H Memon, B Davis, R McCallum. Texas Tech University Health Sciences Center El Paso, El Paso, TX

Introduction Median arcuate ligament syndrome (MALS) also known as celiac artery compression syndrome is a rare gastrointestinal condition with an estimated incidence of 2 per 100,000 population. Predominantly in female patients, it is characterized by the compression of the celiac artery at its origin from the aorta by the median arcuate ligament, also entrapping the celiac plexus resulting in upper abdominal pain, notably postprandial pain, associated with nausea, vomiting, food aversion, and weight loss. An abdominal bruit is present in approximately one-third of patients. MALS is a diagnosis of exclusion relying on more recognized etiologies of abdominal pain to be first investigated.

We present a case of abdominal pain secondary to MALS that was appropriately diagnosed after requiring narcotic medication and responding to surgical therapy.

Case description A 48-year-old female with a past medical history significant for diabetes mellitus and hypertension presented with an eight-month history of sharp, non-radiating, intermittent left upper quadrant pain with fluctuating intensity. She denied any association with meals but reported aggravation by positional changes and direct palpation. Review of systems was negative for nausea and vomiting.

Upper endoscopy and colonoscopy were unremarkable. A four-hour nuclear medicine scintigraphy gastric emptying study of a solid meal indicated rapid emptying at 30 and 60 minutes. An abdominal ultrasound to study Doppler blood flow suggested a spectral waveform of the celiac artery suspicious for MALS. On inspiration, peak systolic velocity was 297 cm/s and end-diastolic velocity of 139 cm/s. On expiration, the peak systolic velocity was found to be 607 cm/s and end-diastolic velocity of 109 cm/s. A mesenteric arteriogram confirmed the stenosis of the celiac artery accentuated with end-expiration and reduced by inspiration. The patient underwent a laparoscopic robotic procedure to release the median arcuate ligament combined with intraoperative Doppler ultrasound blood flow measurements. After ligation of the ligament, the expiration peak velocity of 169 cm/s was markedly reduced compared to the preoperative data. Two weeks after the procedure, the patient was seen in the clinic and she reported significant improvement with essentially no abdominal pain.

Discussion We present an atypical case of MALS presenting as abdominal pain not accentuated by meals and without associated nausea and vomiting. Diagnostic modalities such as Doppler ultrasound blood flow velocity and aortic angiogram were able to make the diagnosis. The goal of treatment of MALS is surgical release of the median arcuate ligament, thus reducing the compression on the celiac ganglion. In this case, we present subjective improvement of abdominal pain following laparoscopic resection of the median arcuate ligament with objective intraoperative findings confirming resolution based on the return of normal blood flow velocity.

#145 A CASE OF WERNICKE ENCEPHALOPATHY IN A PATIENT WITH AUTISM DISORDER AND RESTRICTIVE EATING
1DL Rohlfs Rivera*, 1AA Prevot, 2N Sharma, 1G Hescock, 1,2,3D Manning. 1LSU Health New Orleans, New Orleans, LA; 2Tulane University Health Sciences Center, New Orleans, LA; 3LCMC Health, New Orleans, LA

Purpose Wernicke encephalopathy (WE) is an acute neurodegenerative condition characterized by confusion, ophthalmoplegia, and gait ataxia. While most frequently seen in chronic alcoholism due to thiamine deficiency, WE can occur in other scenarios where there is poor nutrition. Recognizing WE in other high-risk patients is important as delay in treatment can lead to permanent neurological deficits, coma, and death.

Methods Retrospective Chart Review. (Case presentation)

Results The patient is a 16-year-old female with a medical history significant for autism disorder, restrictive eating with weight loss, and epilepsy who presented with intractable nausea and emesis requiring intravenous hydration. The patient was diagnosed and treated for H. pylori with improvement of her symptoms. Several days into her hospital stay, she developed cranial nerve sixth palsy, confusion, and ataxia. CT head and ophthalmology exam were not suggestive of increased intracranial pressure. MRI brain with and without contrast revealed T2 hyperintensity of the hypothalamus, bilateral mamillary bodies, parietal thalami, and periaqueductal gray matter consistent with Wernicke-Korsakoff Syndrome. The patient was given high dose parenteral Thiamine with improvement in cranial nerve palsy, confusion, and gait. Thiamine level obtained prior to supplementation was low. Patient was continued on oral thiamine supplementation and was admitted to inpatient rehabilitation for neurorehabilitation.

Conclusions It is important to recognize children and adolescents who might be at increased risk for thiamine deficiency as WE is an uncommon disease in the pediatric population and dextrose containing intravenous fluids (commonly used in pediatric rehydration protocols) are known to precipitate or exacerbate WE. Identification of high-risk patients can also lead to early diagnosis and treatment.

#146 PRIMARY BILIARY CHOLANGITIS – SHERLOCK’S CLUE TO THE FATIGUED MAN
P Stueve*, I Pathirana. Dwight David Eisenhower Army Medical Center, Fort Gordon, GA

Case Report Primary biliary cholangitis (PBC) is a rare disease characterized by intrahepatic destruction of the bile ducts and
cholestasis. The diagnosis requires two of the following three criteria: an elevated alkaline phosphatase (ALP), presence of anti-mitochondrial antibodies (AMA), and histologic evidence of destructive cholangitis and interlobular bile duct destruction. The disease has a female to male predilection of 10:1, with diagnosis typically occurring in the fourth through seventh decade of life. Risk factors associated with this condition include family history of PBC, tobacco exposure, history of other autoimmune diseases, and previous pregnancies in females.

Case Description Our case involves a 74-year-old Caucasian male with iron deficiency anemia, remote 40 pack-year history of tobacco use, and chronic liver masses who presented to the outpatient internal medicine clinic for evaluation of unintentional weight loss and fatigue. He was found to have elevated liver associated enzymes in a cholestatic pattern with ALP of 197 IU/L, AST of 64 IU/L, and ALT IU/L of 177. Repeat testing six months later demonstrated resolution of the transaminase elevations with continued elevation of ALP at 145 IU/L. Computed tomography (CT) of the abdomen and pelvis re-demonstrated pathologically enlarged (stable) lymph nodes, and unchanged liver masses with recommendation for triple phase CT. Subsequent imaging showed indeterminate lesions only seen on arterial phase concerning for hepatocellular carcinoma versus other benign cause. A liver biopsy was then performed demonstrating only a ductulocentric inflammatory process including perportal and periductal inflammation without bridging fibrosis. Laboratory results showed a positive anti-mitochondrial antibody (AMA) of 106 units (0–20 units ref range) with negative anti-smooth muscle antibody, anti-nuclear antibody, IgG and ferritin. He had preserved hepatic synthetic function. His imaging, pathology, and laboratory results were most consistent with a diagnosis of PBC. Treatment with ursodeoxycholic acid (UDCA) was initiated with resolution of symptomatic cholestasis.

Discussion This case illustrates the importance of maintaining a broad differential for atypical presentations of common derangements, even in patients who lack typical demographic characteristics. PBC and other autoimmune conditions should be evaluated in patients that have laboratory or tissue abnormalities raising appropriate clinical suspicion for the condition. Accurate diagnosis of these conditions will facilitate early proper treatment and thus improve patient outcomes.

GIST typically derives from intestinal cells of Cajal and often is positive for c-KIT, a tyrosine kinase that encodes stem cell factor receptor, which undergoes a point mutation to cause malignancy. Surgical resection is a potentially curative treatment for localized GISTs. Smaller tumors may permit enucleation, while esophagectomy may be needed in larger or high-risk tumors with a high mitotic rate. Recurrence and metastasis are common with aggressive c-KIT mutations. Tyrosine kinase inhibitors such as Imatinib are recommended by the National Comprehensive Cancer Network (NCCN) for mass greater than 3 cm even if they are localized, to minimize the risk of relapse.
Health care research, quality improvement & patient safety

Joint plenary poster session and reception
4:30 PM
Thursday, February 10, 2022

Standards in Practice Conference

#149 STANDARDIZATION OF THE MANAGEMENT OF NECROTIZING ENTEROCOLITIS AT A SINGLE-CENTER NEONATAL INTENSIVE CARE UNIT: A QUALITY IMPROVEMENT INITIATIVE

NIB Akahara*, M Arbuthnot, M Chang, R Pandey, K Tsao, C Domenoske, W Li, C Ault, AL Speer, M Forbes, C Aneji. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

Purpose of Study Necrotizing enterocolitis (NEC) is an inflammatory disease that affects the small or large bowel. NEC is a leading cause of death in neonatal intensive care units (NICU).

It occurs in 1 to 3 per 1000 live births, with more than 90% occurring in infants <32 weeks gestational age and <1500 g birth weight. The etiology of NEC is unknown but available evidence supports a multiple-factorial mechanism. There is significant variation in the care provided within and between different NICUs. There is evidence from other patient populations like congenital diaphragmatic hernia patients, that standardizing care leads to better outcomes. The purpose of this quality improvement (QI) initiative is to standardize the care of NEC patients from diagnosis to discharge. This initial stage involved evaluating 6.4 years of patients who were managed for NEC at our single-center to establish baseline data.

Methods Used We conducted a retrospective chart review on all patients diagnosed and treated for NEC from January 1, 2015, through April 30, 2021, at Children’s Memorial Hermann Hospital (CMHH) to establish our baseline data. The patient outcomes of interest included length of stay, antibiotic utilization, timing of surgery team consultation, enteral and parenteral nutrition practices. A multidisciplinary team is developing a guideline. Two PDSA cycles will be run, and prospective data will be collected to assess 6- and 12-month outcomes. We present the baseline data.

Summary of Results There were 132 patients diagnosed with NEC in the 5-year period at CMHH; 47% males and 53% females. The average gestational age was 28.8 weeks, average birth weight was 1414.4 g with range of 360 g to 5560 g. Seventy-two percent of cases were managed medically while 28% required surgery. Of the 26.5% of patients who died in hospital, majority (91.4%) had surgical NEC while 8.6% had medical NEC. There was variability in the length of stay of patients, antibiotic utilization, use of surgery consultation, and nutrition practices.

Conclusions There was a higher incidence of NEC in preterm, very low birth weight patients. There was variability in management of these patients. We are currently working on a comprehensive NEC management guideline with the goal of standardizing the care of patients diagnosed with NEC at CMHH and decreasing the variability by 50% over 1 year.

We anticipate that this will improve antibiotic usage, nutrition and reduce the average LOS of patients.

#150 PEDIATRIC INTENSIVE CARE UNIT AND OPERATING ROOM HANDOFF PROCESS IMPROVEMENT


Purpose of Study This quality improvement initiative seeks to assess the perception of process change of direct admission to PICU or utilizing a nurse driven handoff tool, as well as perceived effects to PICU staffing, OR efficiency, patient safety, and workflow.

Methods Used Anonymous survey data using Likert 5-point scale of frequency was collected via Survey Monkey. This data was utilized to track baseline team member perception of the PICU-OR Handoff Process prior to implementation of a handoff tool and immediately after its implementation at 1 month. A follow-up survey will be completed 6 months after the process change. Physicians, nurses, and respiratory therapists from the departments of Pediatric Critical Care, Anesthesia, and Surgery were asked to participate in the survey voluntarily. No identifying data was collected or stored during this study.

Summary of Results Data collection began in April 2021 with a baseline and 1 month post-handoff implementation data. Thus far there have been 59 team members from the departments of Anesthesia (n=10), Pediatric Critical Care (n=46), and Surgery (n=3) who participated. Data collection of 6 months post intervention is ongoing. The survey data included Likert 5-point scale of frequency (Never, Sometimes, Often, Usually, and Always). Four survey questions were included which addressed anticipation of patient arrival to PICU, whether comprehensive report was given at the time of admission and whether adequate information was given at the time of handoff to provide excellent care, or whether clarification of treatment plans was required within 1 hour. This was followed by a final qualitative, open ended question to provide any thoughts on the handoff process as well as suggestions for improvement. A comprehensive report given in person was reported as given often or always approximately 22% of the time, respectively (13/59 each, 26/59 total). Team members felt they usually had the information they needed to provide excellent care 37% of the time (n=22/59). Forty seven percent of respondents (n=28/59) felt they sometimes needed to clarify treatment plans within 1 hour of report.

Conclusions Though limited by small sample size with data collection still in process, this quality improvement initiative highlights the need for further process improvement to provide the safest, timely, organized transition of care of a pediatric patient between the OR and the PICU. With each transfer of information there exists the possibility to introduce error which may lead to adverse events. A dedicated hand-off tool can help to accomplish these goals by bringing all stake holders together, allowing the opportunity for listening and questioning, as well as outlining plans of care.
CARETAKER BELIEFS TOWARDS INFLUENZA VACCINATION

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Purpose of Study
An effective vaccine against influenza is available, yet a significant portion of the pediatric population does not receive it. Across the United States during the 2017–2018 influenza season, 68% of children aged 0–4 years and 55% of children aged 5–17 years received their influenza vaccine. The lack of vaccination in the pediatric population causes many patients to be vulnerable to the potentially devastating effects of influenza. We sought to investigate caretaker beliefs towards the influenza vaccine to better understand the possible motivations for, and barriers to, parents vaccinating their children.

Methods Used
De-identified paper surveys were given to caretakers of patients seen at an academic pediatric clinic during the 2019–2020 and 2020–2021 influenza seasons. The survey included demographic questions for both the patient and caretaker. The survey also included questions about the perceived severity of the flu and beliefs regarding influenza and other pediatric vaccinations. Descriptive and inferential statistics were calculated using SPSS®version 28.

Summary of Results
During the study period, 87 completed surveys were collected from caretakers of patients. While most caretakers (82%) considered influenza to be a serious disease, fewer (49%) indicated that the vaccine prevents disease. Few caretakers (28%) believed that it is possible to contract influenza from the vaccine. Caretakers (54%) agreed to vaccinating their child(ren) routinely for influenza while more (74%) indicated vaccinating their children for other diseases. Even fewer (41%) caretakers indicated that they vaccinate themselves against influenza each season.

Conclusions
The preliminary data from this study has shown a difference in caregiver beliefs regarding the influenza vaccine compared to regular childhood immunizations. The majority of the survey respondents indicated support of regular immunizations with some skepticism of the influenza vaccine.

A PILOT STUDY EVALUATING RESPIRATOR FIT BASED ON APP-DETERMINED AND SELF-DETERMINED FACIAL SHAPE

N Buynak*, D Hahn, D Tyungu, C Aston. Oklahoma University Medical Center, Oklahoma City, OK

Purpose of Study
This project was developed to find a quick and effective way for frontline workers to obtain a well-fitting N95 in resource limited settings when a fit test may not be plausible. The goal was to determine if facial shape could be used as a predictor of N95 fit.

Methods Used
Forty volunteers were given a facial shape self-assessment questionnaire which asked them to subjectively determine their own facial shape and then measure several dimensions with a disposable tape measure: half facial height (nasion to menton), full facial height (trichion to menton), and facial width (bisymygomatic breadth). Two free facial assessment phone applications, ‘Face Shape’ and ‘Zennioptical’, were used as an additional assessment for facial shape.

Participants were then fit tested with an AccuFIT 9000 Respirator Fit Test Machine using an OSHA standardized technique to assess the quantitative fit of four different N95’s – a small and regular sized duckbill type mask, and a small and regular sized cup style mask. Pass/fail criteria was determined per OSHA standards and was set at a fit factor greater than or equal to 100.

Summary of Results
There was no association between face shape and best fitting mask based on either self-assessment (p=0.51), the zennio app (p=0.59), or the Face Shape app (p=0.095). Correlation was not seen even when grouping face shapes into curved and angular.

Face shape based on the 3 self-measured objective facial dimensions can be predicted with about 65% accuracy.

Self-assigned face shape correlated with Zenni app face shape 40% of the time and with the Face Shape app 37.5% of the time (p>0.1). All three correlated 25% of the time, however the mutual face shape was ‘oval’ which was the most common facial shape identified in this study by both the applications and self-assessment.

Summary of Results
Forty-four percent of the participants did not pass fit testing per OSHA standards with their routinely worn N95’s. The participants in this group also generally had poorer fit testing overall, with 50% of this group failing fit testing for all four masks. In addition, 33% of the entire study group only passed fit testing with one of the available N95’s in this study.

Conclusions
Data from this pilot study shows that there is no correlation between N95 fit and face shape, largely due to the variability and subjectivity in the determination of facial shape by either app, self-assessment, or objective self-measurement. However, the researchers learned that nearly half of the participants did not pass fit testing for their regularly used N95’s during the COVID pandemic. This illustrates a significant concern for the safety of healthcare workers and the inability for them to access appropriate, well-fitting respirators in resource limited settings. Furthermore, it highlights the importance of personalized fit testing prior to exposure to airborne particles and the need for access to multiple styles and sizes of respirators.

IMPROVING PEDIATRIC CLINICAL RESEARCH COMPETENCY THROUGH INTERACTIVE E-LEARNING MODULES

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Purpose of Study
Clinical research has significantly advanced the diagnosis, treatment, and prevention of illness and has provided patients access to ‘state-of-the-art’ care. While the curricula of pediatric trainees often include structured education for interpreting the results of such research, rarely are trainees instructed in conducting research itself. Children have historically been underrepresented as subjects of clinical research, making the ability to expand participation in high-quality pediatrics research essential to improving our knowledge of children’s health in order to provide the best medical care. We designed, implemented, and executed a longitudinal research course that accomplished these goals, containing ten interactive online modules with periodic face-to-face sessions.
consisting of coaching in use of various tools and problem-based learning sessions.

Methods Used

The PRIME project at Arkansas Children’s and the University of Arkansas for Medical Sciences (UAMS) consisted of online modules as well as face-to-face sessions for trainees in pediatrics including residents and fellows. After completion of the modules, participants were asked to complete an online survey and post-course knowledge check. The survey asked questions about the modules, including whether the trainees felt the modules improved their research competency and whether they preferred synchronous or asynchronous sessions. Participants were also asked to rate the modules and to state three most impactful lessons/skills learned from the modules.

Summary of Results

Of the eight courses evaluated, six of them received at least one rating of ‘excellent’ and all received at least one rating of ‘good’. No course received any poor evaluations. Courses that provided hands-on education for practical, readily available concepts were most favored. All post-survey responses indicated a perceived, self-identified increase in confidence in the ability to identify a research question and design a study. Respondents also indicated that they are more likely to incorporate research into their future careers based upon the knowledge gained from this course. Half of the respondents noted that they preferred live, scheduled sessions as opposed to individual online sessions.

Conclusions

Based on feedback from attendees, this innovative course successfully helped training clinicians gain knowledge and competence in core principles of clinical research, develop their own protocols for pursuing their own studies, and change attitudes toward pursuing future research-related careers. With an increasing number of clinicians with appropriate interests and skills planning to participate in clinical research, a greater number and diversity of children may be engaged in future clinical studies.

#154

BIBLIOMETRIC ANALYSIS OF PUBLICATION TRENDS IN THE COVID-19 PANDEMIC

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Purpose of Study

The COVID-19 pandemic has presented a major challenge to the global medical community resulting in many necessary changes in worldwide research publication trends. As focus and funding of research have shifted throughout the pandemic, so too have publication types, topics, and country-wide research output. While changes during the pandemic have undoubtedly had an impact on publications, these impacts and their implication for long-term research have been poorly characterized. We aim to illustrate these shifting changes in publications during the COVID-19 pandemic.

Methods Used

Publications were accessed using PubMed Advanced Search Criteria. The beginning of the COVID-19 pandemic was set as the date of the first reported case in Wuhan on 12/31/2019. Searches were conducted on 9/10/2021. We generated searches based on type of publication, country affiliation of the first author, date ranges, and specific topics such as ‘COPD’ or ‘Diabetes’. We analyzed the changes in publications during the 4 months before the first case of COVID-19 and every 4 months thereafter. Results were analyzed using SPSS.

Summary of Results

In the two years before the pandemic, 3541.9 PubMed-indexed articles were published per day, while 4379.9 such articles have been published each day during the pandemic. Covid-19 resulted in net increases relative to baseline in case reports, reviews, and retracted publications with net decreases in clinical trials, multicenter studies, and randomized control trials in most yearly tertiles relative to the 4 months before Covid-19. Meta-analysis and observational studies demonstrated initial net increases followed by subsequent net decreases. The largest percent decrease in publication type relative to baseline has been seen in Phase I (~82.6%) and Phase IV (~80.5%) clinical trials. In the first yearly tertile, China had the largest percent increase in publications relative to baseline (38.4%) followed by Italy in the second tertile (32.0%) and India in the third tertile (43.5%). Increases in daily publications were seen in many research topics including diabetes (32.8/day), asthma (4.6/day), heart disease (2.9/day), and COPD (2.4/day).

Conclusions

COVID-19 has caused a shift in research focus and funds towards pandemic-related research. This has emphasized lower evidence research, such as case reports, and shifted focus away from high evidence studies, such as clinical trials and meta-analysis. Production of high-evidence studies does not appear to be recovering as the pandemic continues. Research output of individual countries appears to coincide with COVID-19 related infection surges in each respective country. Despite new emphasis on Covid-related research, many important topics such as diabetes and heart disease have experienced increases in publications.
IMPROVING FIREARM SAFETY COUNSELING IN PRIMARY CARE CLINIC

J Bell, A Donahue*, AR Wheeler, CR Hunley, J Joseph, A Martin, M Ladinsky. The University of Alabama at Birmingham, Birmingham, AL

Purpose of Study
Pediatricians can play a major role in the prevention of pediatric firearm injuries. The presence of firearms in the home is associated with increased likelihood of suicide, homicide, and unintentional injuries. Unintentional and self-inflicted firearm injuries are less likely in homes where weapons are stored unloaded and locked. Child health care providers can and should play a key role in preventing gun violence, injury, and death in children. The American Academy of Pediatrics (AAP) recommends that pediatricians educate patients and families about the dangers of firearms in the home. Gun storage that is more secure minimizes injuries, and physician counseling combined with the distribution of cable locks appears to improve gun storage security. How frequently and effectively we provide firearm safety counseling to Primary Care Clinic (PCC) patients is poor. The objectives of this quality improvement (QI) project are to increase the consistency and quality of firearm safety counseling in PCC, as well as to provide patients with gunlocks.

Methods Used
This project has undergone multiple Plan-Do-Study-Act (PDSA) cycles including PCC ‘spotlights’, a didactic lecture, and resident surveys. The current focus is on retrospective chart review of 9-month-old and 24-month-old well checks in PCC and determining if the clinic resident documented that a gunlock was provided and if firearm safety counseling was provided. Charts from June 2018 to present were reviewed with the plan to include all charts from June 2017 to April 2021.

Summary of Results
To date, 1,269 well child visits have been reviewed. Of these, residents documented that 7 gunlocks were distributed (0.6%) and firearm safety education was provided to 237/1269 (18.7%). Manual monthly gunlock counts demonstrate that, in reality, 86 gunlocks have been distributed from Jan 2020–April 2021.

Conclusions
The discrepancy in resident documentation and manual gunlock counts is likely secondary to a busy clinic and a difficult to navigate Electronic Medical Record (EMR) system. A PCC ‘spotlight’ was performed August 2020, which might explain the increase in gunlocks distributed the following month. A future PDSA cycle in December 2021 will include creating templates within the EMR to improve documentation. We hope to continue to expand the project to maximize firearm safety counseling and gunlock distribution in PCC.

EVALUATING PEDIATRIC RESIDENT SATISFACTION WITH SCHEDULING AND CURRICULUM CHANGES TO THE INPATIENT NIGHT FLOAT ROTATION

AY Hammouda*, JJ Burns, CR Antonetti. University of Florida, Pensacola, Pensacola, FL

Purpose of Study
The purpose of this study is to determine the impact of changes to the night float inpatient resident rotation on resident perceived patient safety, workload/efficiency, resident wellbeing, educational experience and interaction with the attending hospitalist.

Methods Used
Changes to the night float inpatient rotation for pediatric residents at Studer Family Children’s Hospital were made including:
1. expanding duration of the night rotation from 1 to 4 weeks
2. staffing with an additional senior resident
3. changing attending hospitalist coverage to outside the hospital instead of in-house
Abstract #156 Figure 1
Proportion control chart of firearm education provided in PCC and determining if the clinic resident checks in PCC and determining if the clinic resident

Abstract #157 Table 1
Percent of residents who ‘strongly agree’ or ‘agree’ that night float changes were an improvement by category

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Safety</td>
<td>82.06%</td>
</tr>
<tr>
<td>Workload/Efficiency</td>
<td>76.54%</td>
</tr>
<tr>
<td>Wellbeing</td>
<td>21.47%</td>
</tr>
<tr>
<td>Education/Teaching</td>
<td>68.34%</td>
</tr>
<tr>
<td>Attending/Hospitalist Interaction</td>
<td>48.06%</td>
</tr>
</tbody>
</table>

4. Implementation of a night float curriculum with a structured syllabus addressing the most common pediatric clinical presentations encountered.

After these changes were made, a survey was conducted to evaluate the effect of changes in the specific components of night float to several important categories. The categories of questions included patient safety, workload and efficiency, resident well-being, resident education/teaching and interactions with the attending hospitalists. All questions were worded with a positive focus and the mean percent of residents who selected ‘strongly agree’ or ‘agree’ on the specific questions for each category were calculated.

Additionally, a separate questionnaire was given to senior residents only, to compare the current night float with the previous more traditional system.

Summary of Results: Results: Sixteen out of twenty-seven residents responded to the survey. Patient safety and workload/efficiency was rated as improved with the night float changes whereas, wellbeing was very much rated as negatively affected by the changes due to the longer duration of night float with few in agreement that wellbeing was improved. (see Table).

Questions given to senior residents only, compared the new system to previous more traditional night float system. Percent ‘strongly agree’ or ‘agree’ were measured: 32% agreed or strongly agreed overall it was a better call experience for them, 32% agreed or strongly agreed they were more willing to teach with new system, only 32% agreed or strongly agreed a harder adjustment to sleep cycle with new system and 66% agreed or strongly agreed that fatigue was worse with the new system.

Conclusions Changes in the night float call schedule resulted in improved resident perceived patient safety and workload/efficiency but there were also problems with resident well-being. This was also reflected in the questionnaire given to senior residents except for sleep cycles which were less disrupted with longer time on night float block.

**Abstract #158 Figure 1**
Control chart illustrating most recently available data

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parent. We also investigated whether specific resource usage correlated with visit metrics including acuity scores, disposition and return visits.

Methods Used Parents completed a brief survey during their child’s PED visit, reporting which of the following resources they used up to three days prior to their child’s ED visit: internet searches, health-related websites, social media, friend/family consultation (with and without medical training), and primary care provider (PCP) consultation (with and without an office visit). For each resource a parent used, they were asked to evaluate its influence and usefulness using visual analog scales (VAS [0–100], 0 = no influence/not useful).

Summary of Results Parents (n=275) used an average of 1.48 (95% CI 1.32 – 1.65) information sources prior to their child’s PED visit. Internet resources (28.4%) and family/friend resources (with medical training: 22.2%, without: 27.6%) were used as commonly as primary care provider consultations (with office visit: 24.4%, without: 24.0%). Higher VAS ratings with positively skewed distributions were observed for parental ratings of family/friend consultations (with medical expertise) and PCP consultations, whereas family/friend consultations (without medical expertise) and web-based resources showed lower VAS ratings with normal or plateaued distributions. No significant correlations were observed between resource usage and visit metrics.

Conclusions Parents frequently used a variety of resources prior to their child’s PED visit. Parents indicated that medically-trained family/friends as well as PCP consultations were more helpful and had a greater influence on care decisions when compared with other resources.

Abstract #160 Table 1 Initial rates of transition discussion and follow-up

<table>
<thead>
<tr>
<th>N</th>
<th>Discussed Transition</th>
<th>Follow-up scheduled</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 yo WCC</td>
<td>74</td>
<td>1 (0.01%)</td>
</tr>
<tr>
<td>16 yo WCC</td>
<td>68</td>
<td>8 (11.8%)</td>
</tr>
<tr>
<td>17 yo WCC</td>
<td>62</td>
<td>32 (51.6%)</td>
</tr>
<tr>
<td>Total (15–17 yo)</td>
<td>204</td>
<td>41 (20%)</td>
</tr>
</tbody>
</table>

Abbreviations: yo – year old, WCC – well child check

Transitions for a Pediatrics Clinic and Its Patients: The Quality Improvement Story

S Austin*, SA Hashimi, A Joshi, J Yaun. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2022-SRMC.158

Purpose of Study The American Academy of Pediatrics (AAP), with endorsements from the American Academy of Family Physicians (AAFP) and the American College of Physicians (ACP) in the last twenty years, has emphasized the importance of standardized transitions of adolescent patients from pediatric to adult providers. The purpose of this quality improvement (QI) project is to analyze the current practices of the pediatric care providers at the UTHSC resident teaching practice in Memphis, Tennessee regarding the transition management of adolescent patients. The clinic services newborn to 18-year-old patients in a resident led clinic staffed by senior pediatricians. This data will be used to establish and implement a standardized transition policy for our primary care clinic.

Methods Used The study is designed based on a traditional plan/do/study/act (PDSA) cycle. Initial chart review included all Well Child Checks (WCC) occurring at LeBonheur Children’s Hospital January – June 2021. A transition worksheet was subsequently created which includes the clinic policy on transition care, instructions for finding an adult provider, space to include medical history and treatment, and a list of local primary care providers. Education was provided to Residents and Attending Physicians in the clinic regarding the QI project goals and implementation. Further chart review was done on a quarterly basis following implementation to determine adherence to the new policy.

Summary of Results Initial chart review shows significant room for improvement in adolescent transition planning. Initial data analysis shows that only approximately 20% of providers are introducing the topic of transition in WCC from 15 – 17 years of age. Age stratification revealed that even at 17 year old visits, only 51.6% of providers are discussing transition, compared to 0.01% at 15 year old WCC and 11.8% at the 16 year old WCC. We compared follow-up appointments for additional opportunities to discuss transition. Further chart review will be aimed at analysis of data after implementation of transition documentation to all WCC during this time frame. The goal post-intervention will be 80% adherence to a standardized transition policy.

Conclusions The goal of this QI project is to develop and implement a standardized transition process at an academic pediatric center. Initial data shows significant room for improvement regarding transition discussion and planning. Implementation of a systematic transition policy at this primary care clinic is under further review to determine adherence to the new policy after the creation of the transition worksheet, provider education, and patient counseling.

Abstract #160 Purpose of Study Admission of patients to a Neonatal Intensive Care Unit (NICU) generally begins after the neonate physically arrives in the NICU from Labor and Delivery (L&D). Similarly, for all patients at Children’s Memorial Hermann Hospital (CMHH), including neonates with congenital anomalies, the electronic health record (EHR) (including the medical record number [MRN]) is not created until the patient’s arrival to the NICU. This may result in delays in patient care outside of basic patient assessment and emergent procedures. To expedite patient care, we developed a quality improvement project to establish a process for creating EHRs in L&D for University of Texas Fetal Center (UTFC) patients. The project aims are to 1) evaluate the current NICU admission process at CMHH, 2) increase NICU patient EHR creation in L&D from <10% to 80%, and 3) expedite patient care after delivery (i.e., physical arrival to the NICU, creation of EHR, and patient care procedures).

Abstract #161 DELIVERY ROOM ADMISSION OF PATIENTS WITH CONGENITAL ANOMALIES TO EXPEDITE CARE IN A LEVEL 4 NEONATAL INTENSIVE CARE UNIT

AR Karla*, KR Anderson, S Lopez. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

10.1136/jim-2022-SRMC.159

Purpose of Study Admisision of patients to a Neonatal Intensive Care Unit (NICU) generally begins after the neonate physically arrives in the NICU from Labor and Delivery (L&D). Similarly, for all patients at Children’s Memorial Hermann Hospital (CMHH), including neonates with congenital anomalies, the electronic health record (EHR) (including the medical record number [MRN]) is not created until the patient’s arrival to the NICU. This may result in delays in patient care outside of basic patient assessment and emergent procedures. To expedite patient care, we developed a quality improvement project to establish a process for creating EHRs in L&D for University of Texas Fetal Center (UTFC) patients. The project aims are to 1) evaluate the current NICU admission process at CMHH, 2) increase NICU patient EHR creation in L&D from <10% to 80%, and 3) expedite patient care after delivery (i.e., physical arrival to the NICU, creation of EHR, and patient care procedures).
Methods Used This quality improvement project includes neonatal patients delivered at CMHH NICU with a prenatal diagnosis of congenital defects or fetal concerns requiring subspecialty or surgical subspecialty care. Baseline data was collected retrospectively from January 2021 to May 2021 for patients delivered at CMHH with NICU admission. The following data was collected: maternal and patient demographics, delivery information, major timepoints in the early care of the neonate (i.e., times of delivery, MRN creation, physical arrival in the NICU, routine procedures), and neonatal outcomes based on prenatal diagnosis (i.e., echocardiogram for congenital heart abnormalities). The same measures will be collected after each Plan-Do-Study-Act (PDSA) cycle of 3–4 months, and the data will be compared to pre-implementation baseline data. The project timeline includes at least 3–4 PDSA cycles, which will each be followed by focus group discussions for further implementation of improvements. PDSA Cycle #1 began in September 2021, and initial focus groups and surveys with CMHH stakeholders (i.e., NICU staff, L&D staff, transport personnel, charge nurses) involved in the admission process were completed prior to implementation.

Summary of Results Pre-implementation data included 105 UT Fetal Center patients delivered between January 2021 and May 2021. Examples of fetal diagnoses included in the study were congenital gastroschisis, hydrenephrosis, oligohydramnios, and intrauterine growth restriction. Stakeholder small-group discussions and surveys with transport team, NICU staff, and L&D nurses did not suggest barriers prior to PDSA Cycle #1. Subsequent PDSA cycles will include follow-up stakeholder discussions, greater standardization of measures recorded in the patient chart, and other improvements identified from data and feedback from previous cycles.

Conclusions Conclusions are pending completion of study cycles.

#160 CLINICAL VALUE OF WEEKEND EEGS
K Khan*, A Wither. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2022-SRMC.160

Purpose of Study Although status epilepticus is often apparent clinically, non-convulsive status epilepticus may occur without clinical accompaniment, requiring an EEG for diagnosis. Lack of access to EEG coverage may result in missed cases or delays in treatment resulting in increased morbidity and mortality. Ideally, hospitals should have 24-hour EEG availability to diagnose NCSE. However, providing EEG services 24/7 can be challenging, especially for small hospitals with limited staff and budgets. In this study, we looked at the results of emergency EEGs performed over a 10-year period to determine the clinical utility of weekend EEGs in a 300-bed acute care hospital with the purpose of finding data in support of increasing availability of stat EEGs in the context of non-convulsive status epilepticus.

Methods Used This retrospective anonymized study qualified and received IRB exemption. The technologist identified all patients who had weekend EEGs between 2010 to 2020. Patient charts were reviewed for a number of factors, including new diagnosis of NCSE, change in anti-seizure medication, and change in level of care. Demographic and clinical data were compiled in an electronic database.

Summary of Results Out of 3,464 total EEGs done at our institution between 2010–2020, 45 (1.3%) were weekend EEGs. Of these, 27 (60%) patients had records available for review. Two patients (7.4%) had NCSE, and three patients (11.1%) received a new epilepsy diagnosis. EEG results led to medication changes in 16 patients (59.3%). In 14 patients (51.9%), an ASD was added. In two patients (7.4%), ASD dosage was increased. In no case were ASD doses decreased or discontinued as a result of the EEG. After the EEG, 10 (37.3%) patients were transferred to a different level of care; eight patients (29.6%) received a higher level of care, and two patients (7.4%) a lower level.

Conclusions Our study demonstrates that stat EEG is clinically useful. As others have observed, the diagnosis of NCSE is essential to effective management. Our study found that weekend EEGs contribute to the diagnosis of NCSE in 7.4% of the patients observed. Our study also found a change of care (ASD change, level of care change) in 59.3% of patients. This suggests that the benefit of a stat EEG goes beyond the diagnosis of NCSE to management assistance that may improve patient outcomes.

#163 OBSTRUCTIVE SLEEP APNEA SCREENING IN CHILDREN: A QUALITY IMPROVEMENT PROJECT
1 S KiliaKode*, 2 A Hall, 1 Ochsner LSU Health, Shreveport, Shreveport, LA; 2 LSU Health Shreveport, Shreveport, LA

10.1136/jim-2022-SRMC.161

Purpose of Study Obstructive sleep apnea (OSA) affects approximately 3% of children. Disrupted sleep presents differently at different ages, making it difficult to recognize. Untreated OSA carries serious morbidity in neurobehavioral, cardiovascular, and somatic growth and development. Early identification and management of OSA is crucial to prevent adverse outcome. We conducted a quality improvement project to spread the awareness and increase the rate of OSA screening in pediatric clinic.

Goal Increase and Standardize OSA screening in children who snore in the general pediatric clinic at Ochsner LSU Health, Shreveport, Louisiana.

Methods Used Baseline data over 1 month was collected before any intervention to find rate of OSA screening. After that three PDSA cycles lasting 2 weeks each were performed testing 3 interventions in each cycle. Interventions included (in order performed) weekly emails, weekly slide show presentations, and Wall Posters to communicate with pediatric residents about OSA screening. An EPIC dot phrase containing the ‘I’m Sleepy Questionnaire’ and the ‘Epworth Sleepiness Scale’ was used for screening OSA. Ongoing data was collected till the end of the project timeline. If screened positive, recommended to refer patients for further evaluation (sleep study) and management.

Summary of Results Baseline data showed 2.56% of children who snored were screened for OSA. Increase in snorers screened from control data after each intervention is as follows: Emails (7.24%), Presentation (3.89%), Poster (9.44%). Percentage increase in snorers referred from emails (2.56%), Presentation (3.89%), Poster (5.44%).

Abstracts
Conclusions Timely screening and identification of OSA in children is important. However, this is not easy in a busy pediatric clinic. Our interventions were successful in showing improvement in rate of OSA screening among children in our clinic. Further measures will be required to demonstrate enhanced and ongoing improvement.

ASSESSMENT OF INFANT SLEEP HABITS WHILE HOSPITALIZED IN A NON-BIRTHING CHILDREN’S HOSPITAL

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Purpose of Study Sleep-related deaths account for 18.2% of all infant mortalities in Tennessee. In 2019, Shelby County had the highest number of infant sleep-related deaths in the state of Tennessee with 23 cases (22% of all infant deaths in the county). Most occur while in an unsafe sleep environment, including co-sleeping or from suffocation items in the crib. A committee was formed at our tertiary care children’s hospital to implement and model safe sleep practices. The purpose of this study is to evaluate the effectiveness of our safe sleep interventions by comparing type and proportion of unsafe sleep practices before and after implementation of a safe sleep policy and staff education.

Methods Used Residents and medical students assessed infant (less than 6 months old) sleep practices with a 6-question survey evaluating sleep location, position, and presence of suffocation items. ICU and NICU patients were excluded. Baseline data was collected from May 2019 to January 2020, with the following interventions implemented thereafter: crib cards explaining safe sleep, [ASLR1] recommendations for removal of extra blankets and other items from the crib, an updated hospital policy based on American Academy of Pediatrics guidelines, and online training for staff. Follow up data was collected from May 2020 to October 2020. Further data collection was limited due to the COVID-19 pandemic until February 2021.

Summary of Results Data was collected for 105 infants in the baseline group and only 29.5% were sleeping safely: 87.6% were in a safe position, 90.5% were in a safe location, but only 30.5% had no suffocation items in the crib. After safe sleep interventions were implemented, data from May to October 2020 in 46 infants showed a slight decline in safe sleep to 23.9%: 84.8% in a safe position, 89.1% in a safe location, and 26.1% with no suffocation items in the crib. Among 116 infants evaluated from February to August 2021, only 13% were sleeping safely: 83% in a safe position, 77% in a safe location, and 30% with no suffocation items in the crib.

Conclusions Overall, infants tend to sleep in safe positions and locations in our hospital, but many continue to have suffocation items in the cribs. Differences in results of the two periods of follow up data could be related to a stricter definition of ‘overall safe sleep’ for survey responses. Due to lack of improvement after initial safe sleep policy implementation, new interventions, including requirement for a physician order for head of bed elevation, involvement of nursing staff as ‘Safe Sleep Champions’, and additional education on suffocation items are planned in order to improve safe sleep in our hospital.

PICKING UP THE PACE – A QUALITY IMPROVEMENT PROJECT

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10.1136/jim-2022-SRMC.163

Purpose of Study For the 2020–21 academic year, the impact of the coronavirus disease 19 (COVID-19) pandemic on residency programs nationwide not only included decreased connectivity between residents, but also decreased involvement in communities. When restrictions were lifted, we anticipated resident engagement would be slow to return to normal. In response, our Pediatric Chief Resident organized monthly community involvement opportunities to promote engagement, and community service. The purpose of this quality improvement (QI) project was to increase resident engagement in the community through volunteer opportunities.

Methods Used The goal for this QI project was to achieve 75% resident engagement in community-centered activities in a twelve-month period. To achieve this, the Chief Resident collaborated with community partners to plan monthly community-oriented activities. A total of twenty-five pediatric residents were invited to participate in these events on a voluntary basis. Participation in each event was documented and used to follow overall resident engagement over time. Cycle 1 consisted of 3 identical events in a 3-month period, which took place at a local farmers’ market as a public health initiative to educate families in the community about summer safety. Cycle 2 incorporated other opportunities to accommodate varying interests and schedules. These options included a Teddy Bear Clinic at a local park and a clothing drive for children attending a local summer camp for children who have experienced burns. Cycle 3, which is ongoing, includes new activities as well as a resident sign-up to provide a more formal invitation and commitment to participate.

Summary of Results Prior to Cycle 1, some residents volunteered in the community on their own volition, but as a residency program, participation in formally organized community service activities was scarce. In Cycle 1, 4/25 (16%) of residents engaged; one PGY2, two PGY3, and the chief resident. With the incorporation of different activities in Cycle 2, resident engagement increased to 9/25 (36%). The same residents who participated in Cycle 1 also participated in Cycle 2, with the addition of two PGY1, two more PGY2, and one more PGY3. Offering a variety of service opportunities has proven to increase resident engagement. Cycle 3 is currently ongoing.

Conclusions Community service restores the connectivity between residents and the surrounding community we serve. Our program’s resident engagement in the community is improving over time as more opportunities are offered. The goal of 75% resident participation has not yet been reached, but ideas for future community service activities are emerging. Realizing residents have different strengths and motivations has emphasized the importance of offering new activities that are appealing to residents who have yet to participate. Our hope is the overall success of this QI project will result in perpetual community involvement.
Purpose of Study Gastrochisis (GS) is a congenital abdominal wall defect affecting 4 in every 10,000 babies. GS patients are managed in a neonatal intensive care unit (NICU) with surgical repair and medical therapy. However, there is significant variation in GS care provided within and between NICUs. For other patient populations like congenital diaphragmatic hernia, evidence shows that standardizing care improves patient outcomes. This quality improvement (QI) project aims to improve patient outcomes by standardizing multidisciplinary care of GS patients from birth to discharge at a single center.

Methods Used We conducted a retrospective chart review of all GS patients from December 2008-May 2020 at Children’s Memorial Hermann Hospital (CMHH) in Houston, Texas to establish a baseline group (N=161). The outcomes tracked included type of gastrochisis (simple gastrochisis (SG) vs. complex gastrochisis (CG)), surgical closure type, antibiotic exposure, enteral and total parenteral nutrition (TPN), length of stay (LOS), and growth. Clinical guidelines (not shown here) were developed and implemented in November 2020. In PDSA cycle 1 (N=9), we compared outcomes of babies born 0–6 months after guideline implementation (November 2020-June 2021) to the baseline. Compliance of NICU teams to the new practice guidelines was also studied. Wilcoxon and Fisher’s exact tests were used to compare continuous and categorical variables, respectively.

Summary of Results In the baseline group, there was variability in IV fluid management (types and total fluid volumes), type of feeding, antibiotic exposure, and laboratory testing schedule.

Cycle 1 showed some improvement in outcomes and a decrease in care variability. Baseline patients had a median TPN duration of 25.5 days (range=7–257), versus a median TPN duration of 23 days (range=12–141) in cycle 1. In the baseline, 97.5% of patients received at least one course of antibiotics and 41.6% received two or more. In cycle 1, 77.8% of patients received at least one course of antibiotics and 33.3% of patients received two or more. In baseline patients, median LOS was 39 days (range=13–291), versus median LOS of 27 days (range=17–180) in cycle 1.

Audit of the cycle 1 group showed variable compliance in some guidelines. Pain control using acetaminophen and initiating enteral feeds with expressed breast milk had 100% compliance. However, limiting days on initial antibiotic therapy had only 33% compliance, and initial type and volume of IV fluids had 67% compliance.

Conclusions There was some improvement in care variability after guidelines were implemented, and we revised some processes with this data. In November, we will compare patient outcomes and evaluate team compliance with new data from six months to one-year post-implementation.

Abstract 

| Abstract #166 Table 1 |
|-----------------------|----------------|----------------|
| Baseline Characteristics | Baseline (N=161) | Cycle 1 (N=9) | p value |
| Male Sex              | 84 (52.2%)     | 4 (44.4%)     | 0.740 |
| Median Gestational Age, weeks (range) | 36 (28–39) | 36 (34–38) | 0.218 |
| Median Birthweight, grams (range) | 2380 (1000–4050) | 2825 (2385–3430) | 0.006 |
| Simple Gastrochisis   | 137 (85.1%)    | 7 (77.8%)     | 0.629 |

Abstract #167 Figure 1 Post-operative antibiotic duration (days) for neonatal surgical procedures.
Summary of Results

Of 134 neonates that had one of the surgical procedures of interest, 23 infants with gastroschisis repair had a median post-operative antibiotic duration (POAD) of 2 days (range 0–7 days); 25 infants with intestinal atresia repair had a median POAD of 1 day (range 0–5 days); 37 infants had NEC procedures with median POAD of 5.5 days (range 1–14 days); and 30 infants had SIP procedures with median POAD of 7 days (range 1–23 days); 49 infants had gastrostomy tubes placed with median POAD of 2 days (range 0–10 days).

Conclusions

Baseline retrospective data demonstrated variability in antibiotic type (data not supplied) and duration in post-surgical neonates even within the same surgical procedure. Next steps include monitoring guideline compliance to determine the need for any modification and additional provider education.

#168 OUTCOMES OF HEPATITIS C VIRUS TESTING AT A SAFETY NET CLINIC IN APPALACHIA

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10.1136/jim-2022-SRMC.166

Purpose of Study

Hepatitis C Virus (HCV) is the most common bloodborne infection in the United States. HCV is a leading cause of liver related morbidity and is heavily prevalent in the Appalachian region. Tennessee in particular is in the top ten states for both prevalence of and population living with HCV infection. In an earlier study (J Invest Med 2019;67 (suppl 2):A74) we demonstrated a 10% incidence of HCV positivity within an unselected population presenting for primary care at safety net clinics. In this study, we present findings from one of those clinics for HCV rapid testing over a seventeen-month period.

Methods Used

Providence Medical Clinic serves many homeless and/or previously incarcerated patients with histories notable for injection drug use and/or intranasal drug use. Over a seventeen-month period from December 2019 to August of 2021, 97 patients were tested using Orasure® rapid HCV antibody test kits of which 12 were antibody positive (12.3%).

Summary of Results

To date eight of these 12 patients have received confirmatory testing showing active infection and seven of these have followed up for continuing care. Of those who followed up, four patients have begun therapy with glecaprevir/pibrentasvir or sofosbuvir/velpatasvir. One of these has fully completed therapy and cure of HCV verified. One patient has completed therapy but was lost to follow up before confirmation of cure. One patient completed six of twelve week of sofosbuvir/velpatasvir but stopped due to headache and was lost to followup. Another patient had no viremia and did not require treatment. Hepatitis B Virus Core antibodies were detected in two patients (16.7%), with no HBV antigenemia. No co-infection with HIV has been detected in the patient population of the clinic at this time.

Conclusions

In conclusion, rapid testing for HCV has been shown to effectively identify HCV infection among the population of a safety net clinic, providing an opportunity for potentially curative treatment.
Abstracts

DEVELOPING A SMARTER AND SAFER ENDOTRACHEAL TUBE

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Purpose of Study Uncuffed endotracheal tubes have been used in pediatric patients following concern for complications surrounding the endotracheal tube (ETT) cuff. It is postulated that high pressure causes venous blockade, leading to edema and/or necrosis causing airway edema, extubation failure, subglottic stenosis, etc. Current devices have not decreased complications significantly, potentially due to the cuff pressure remaining above central venous pressure. We hypothesize that measuring and decreasing pressure exerted by the cuff will decrease tracheal mucosal injury.

Methods Used A prototype endotracheal tube was developed, integrating a sensor that can detect changes in pressure of the cuff and leak around the cuff. 16 New Zealand White (NZW) rabbits were equally randomized into 2 groups, comparing standard cuffed ETTs to our prototype. Intubation was performed with video assistance. ETT cuffs were inflated to eliminate leak by auscultation in the control group and based on signal output in the intervention group. Both groups were ventilated for 2 hours and vital signs were monitored. Subsequently the trachea was excised, fixed in formalin, and examined histologically. The percent surface area preserved was evaluated by generating two masks per slide, one covering all the undamaged area and the second one covering only the damaged area, and counting the colored pixels for each mask using a Python script.

Summary of Results With 8 rabbits in each group, 4 died in the control group, 2 died in the intervention group, due to pre-existing illness. In the control group, 35% surface area of the trachea mucosa was intact, compared to 70% in the intervention group, which is greater than our hypothesized difference of 15%.

Analysis of the waveform data generated yielded the surprising results of our ability to use the sensor to monitor physiologic parameters, including respiratory rate, heart rate, and possibly blood pressure. The data also suggest that cuff shape may be as important as cuff pressure for creating a seal in the trachea and a dampening cuff pressure design is better compared to the traditional cuff design.

Conclusions Our prototype endotracheal tube decreases tracheal mucosal injury and may provide physiological monitoring capabilities. Further work needs to be done to determine the long term outcomes of this device.

ENHANCED AUSCULTATION WITH THE EKO CORE DIGITAL INSERT TO CALCULATE HEART RATE DURING NEONATAL RESUSCITATION

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Purpose of Study Hearing loss can limit a physician’s ability to auscultate sounds. In addition to age-related presbycusis, pathologic hearing loss can occur at younger ages. Devices that increase accessibility for hearing-impaired individuals may also be helpful to those with normal hearing. The Eko CORE Digital Attachment (Eko Devices, Berkeley CA) is a device which attaches to a standard stethoscope and is capable of amplifying auscultated sounds and wirelessly connecting to a smartphone or tablet for visual display and automated heart rate (HR) calculation. The objective of this project is to determine if the Eko CORE Digital Attachment HR calculator is not inferior to calculation by other methods and may decrease the time it takes for a neonatal resuscitation team to calculate the infant’s HR during the initial steps of resuscitation when compared to standard auscultation or ECG or pulse oximetry (ECG or PO).

Methods Used This is a single-center, observational study to compare 3 methods of determining the HR during neonatal resuscitation: 1) Standard Auscultation (SA), 2) Enhanced Auscultation (EA) with the Eko CORE Digital Attachment, and 3) ECG or PO. The study population consists of members of the neonatal resuscitation team when an infant requires more than the initial steps of resuscitation. Encounters are defined as each time the team leader asks for an assessment of the infant’s HR. The primary outcome of this study is time to estimate HR (T) during neonatal resuscitation by the 3 methods. Data collection will include: years of experience of the HR assessor, infant’s gestational age, birthweight and HR, and time to estimate HR by all three methods (SA, EA, ECG or PO) when available at each encounter.

Summary of Results Of the first 5 encounters, T_EA was unmeasurable 3 times. Of two of the 5 encounters with both T_SA and T_EA measurements, T_EA was less than T_SA(25 vs 36 and 7 vs 11 seconds). Mean T_SA was 20.4 sec (range 11.0–36.0, n=5). Mean T_EA was 16.0 sec (range 7–25, n=2). HR reported by SA was somewhat imprecise, with reports of ‘about 50’ or ‘65 to 70’. Whereas, HR reported by EA was precise, being 171 and 162 on the 2 occasions in which the automated system worked and exactly correlated with the HR displayed by ECG both times.

Conclusions Enrollment is continuing with a goal of 150 encounters. Initial encounters show that the automatic algorithm in the Eko software is subject to interference from vigorous crying, lung sounds and ambient noise. When successful, EA was faster than SA for these few encounters. HR assessors are taking well over the 6 seconds recommended during NRP to calculate a HR. T_SA and T_EA can be expected to improve with practice. The sound amplification feature of the Eko device during SA is helpful to persons with normal hearing as well as hearing-impaired users. Although, some users found

Abstract #170 Figure 1 Hematoxylin and eosin stained tracheal sections; preserved mucosa highlighted in red

Abstract #171
the amplification to be too loud. This project was sponsored by the American Academy of Pediatrics, Human Factors in Neonatal Resuscitation Grant Program.

#172 PILOT ASSESSMENT OF CLEFT LIP AND PALATE PATIENTS AT A REGIONAL CLEFT CENTER
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10.1136/jim-2022-SRMC.170

Purpose of Study Retrospectively assessed the cleft population at a regional children’s hospital and craniofacial team over a 30 month period using a standardized set of outcomes developed by the cleft team. Assessment characterizes the demographic factors and the distribution of cleft anomalies of our patient population. Surgical data: age at primary cleft lip (CL) repair, primary cleft palate (CP) repair, and alveolar bone graft (ABG) was also analyzed.

Methods Used Electronic health records were queried for ICD-10 and CPT codes that correlated with cleft anomalies and surgical procedures of the lip and palate to generate a sample of 457 patients evaluated at the hospital over a 30 month period. Demographics, cleft characterization, and surgical procedures was analyzed using Microsoft Excel and compared to national statistics for the epidemiology and care timelines of CL±P.

Summary of Results The sample identified as 85% Caucasian, 10% African American, 2% Asian, 2% Other, and 1% American Indian. 88% of patients reside in Louisiana. Payor status indicated 66% Medicaid, 32% Commercial, 1% Self Pay, and 1% Medicare. 43% presented with cleft lip and palate (CL/P), 38% cleft palate only (CPO), 12% cleft lip (CL), and 7% cleft lip/ alveolar (CLA). 53% of patients were male and 47% female. Male patients presented with 54% CL/P, 28% CPO, 11% CL and 7% CLA. Female patients presented with 49% CPO, 29% CL/P, 14% CL, and 8% CLA. The average age at primary cleft lip repair was 5.2±2.6 months, primary cleft palate repair was 1.4±0.8 years, and alveolar bone grafting was 11.6±3.7 years.

Conclusions Our population sample does match current national cleft characterization statistics: CP vs. CL±P, male to female ratios for CL±P and CPO.

Standard cleft care timeline recommendations in the US maintain that primary CL repair should be performed at 3-6 months, primary CP repair at 8-12 months, and ABG at 6-10 years. In our sample, time to surgery fell within the recommended timeframe for primary CL repair, but not for primary CP repair or ABG.

This pilot study serves to elucidate areas of delayed care to focus future interventions. Specifically, phenotypic cleft characteristics and demographic factors will be compared to age at surgery to illuminate populations that require more outreach, surveillance, and cleft care coordination.

#173 PREDICTING CERVICAL SPINE INJURY IN CHILDREN
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10.1136/jim-2022-SRMC.171

Purpose of Study The current trend in pediatric trauma is to minimize radiation exposure from imaging; c-spine injuries remain difficult to diagnose without computed tomography (CT). We sought to identify predictors for cervical spine injuries to determine which pediatric patients would benefit from a CT of the cervical spine for further evaluation.

Methods Used All pediatric patients <18 years who presented to a tertiary freestanding pediatric level 1 trauma center over 5 years that had a cervical spine CT performed for trauma were reviewed. Descriptive statistics, univariate and bivariate analysis were performed.

Summary of Results Overall 243 patients were identified with 41 patients diagnosed with a cervical spine injury. Though age and gender were not associated with injury, it was associated with Caucasian race. MVC was the most common mechanism of action (42%) followed by fall from heights and pedestrian versus automobiles (15%). The mechanisms of action (MOA) were also designated high versus low impact per ACLS guidelines. 66% of patients with C spine injuries were high impact. In a multivariable analysis race, transportation from a referring facility, altered mental status, intubation prior to arrival or during resuscitation, and impact of MOA (high vs. low) found to be significant predictors of cervical spine injury.

Conclusions Cervical spine injury was associated with white race, impact of mechanism of action, intubation, transfer from another facility, neurologic deficit, and altered mental status. This is more consistent with the adult Canadian C spine rule more than the Nexus criteria due to the inclusion of impact of mechanism criteria in the Canadian C spine rule. This study showed that awake children without any neurologic findings who were in a low impact trauma have low risk of injury and might not benefit from a CT of the cervical spine.

#174 PEDIATRIC MULTIDISCIPLINARY CARE HUDDLE: IMPROVING QUALITY, EFFICACY, AND EFFICIENCY
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10.1136/jim-2022-SRMC.172

Purpose of Study Multidisciplinary Care Huddle (MCH) serves as an important platform for communication and coordination of patient care. At our institution, MCH occurs twice weekly at 9 am via a virtual platform. During MCH, senior residents on the pediatric hospitlist teams present patient overviews to the multidisciplinary care team. A needs assessment regarding MCH revealed multidisciplinary team members concerns around timeliness and content covered and resident concerns around unclear expectations.

Methods Used A checklist was created detailing the types of information team members used from MCH to perform their roles. Following collection and analysis of pre-intervention data, outcome measures were set as percent start time by 9:02 am and percent content communication of patient descriptions, plans of care, room numbers, and discharge dates. Balancing measures included average time per patient, resident satisfaction with efficiency of MCH, and resident perception that MCH interferes with their other clinical duties. Three Plan-Do-Study-Act (PDSA) cycles were completed. Interventions included scheduled times for each team to arrive at MCH, resident education on expectations, a posted guideline of information to be presented, phone reminders, and cues for resident start.
Abstracts

**Abstract #174 Figure 1** Percent of time room numbers, patient descriptions, plans of care, and estimated discharge dates were conveyed during Multidisciplinary Care Huddle from April 1, 2021 to August 26, 2021

**Summary of Results** Content coverage improved with increased presentation of room numbers (64% to 87%), patient descriptions (27% to 98%), plans of care (47% to 96%), and discharge dates (28% to 62%). Percent of time MCH started by 9:02 decreased from 62% to 28% for PDSA 1 but improved to 79% for PDSA 2 and PDSA 3. Resident perceptions regarding interference of MCH with clinical duties improved. However, average time per patient presentation increased from 34 sec to 41 sec, and resident satisfaction with efficiency of MCH decreased.

**Conclusions** Resident education, an established and displayed guideline for desired information, and time reminders and cues improve content delivery, start times, and resident perception regarding interference with clinical duties. This process has the potential to be expanded to other subspecialty teams or to other facilities. Opportunities for interventions targeting efficiency of MCH also remain.

**Abstract #175** CONDUCTING A PEDIATRIC RANDOMIZED CLINICAL TRIAL DURING A PANDEMIC: A SHIFT TO VIRTUAL PROCEDURES

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**Purpose of Study** Prior to the COVID-19 pandemic, we initiated a randomized clinical trial for childhood obesity. The trial consented 131 and randomized 104; 6–12 year old patients who reside in rural regions in 4 member states (DE, NE, SC, and WV) of the ECHO IDeA States Pediatric Clinical Trials Network (ISPCTN). Approximately 6 weeks into the 10-week recruitment period, the trial was forced to pause all study activity due to the COVID-19 pandemic. This pause necessitated a substantial revision in recruitment and study methods to using virtual procedures. This descriptive paper outlines ways to recruit and manage clinical trial participants using technology to obtain informed consent, obtain height and weight measurements by video, and maintain participant engagement throughout the duration of the trial.

**Methods Used** We reviewed multiple data sources to describe the transition to virtual study procedures. These include research electronic data capture (REDCap) surveys conducted both during the pause and at the completion of the study to identify readiness for each site to conduct virtual recruitment and other study procedures as well as at the end of the study to identify issues that each site encountered during the virtual phase of the project. We also reviewed meeting notes and study enrollment figures.

**Summary of Results** The IRB approved study changes allowed for variability between clinical sites in terms of virtual communication platforms and methods for participant consent and height/weight assessment. Identified advantages of the study included ability to conduct visits during all times of the day or evening, and reduced travel requirements. Challenges included poor Internet reliability in some rural areas; additional participant contacts for consent and eligibility screening; shipping delays of materials; reliance on family to perform height and weight measures; increased costs for materials and shipping. Despite the added challenges, all sites were able to meet the study enrollment objectives. Flexibility was key in implementation of virtual procedures given the variations in site resources.

**Conclusions** While each study site had certain challenges unique to their location during the pandemic, we also identified several common issues with the transition to remote procedures. Lessons learned from this study can assist other study groups in navigating challenges, especially when recruiting and implementing studies with a difficult to reach rural and underserved populations or during challenging events like the pandemic.

**Abstract #176** PRELIMINARY DATA COLLECTION FOR FORTHCOMING EVIDENCE-BASED QI FOR THE MANAGEMENT OF ASTHMA EXACERBATION IN THE ACUTE CARE SETTING

A. Thompson*, S. Martin, E. Komfeld, D. Hahn, C. Aston, M. Nalnik. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

**Purpose of Study** An estimated 5.5 million children have asthma. Representing about 500,000 emergency department (ED) visits and 2 million office visits; posing a large financial burden on our healthcare system. To examine the quality and equity of asthma care at the Oklahoma Children’s Hospital (OCH).

**Methods Used** We included all visits from July 2019 and September 2020 with a primary diagnosis of asthma. Exclusion criteria included another chronic lung disease. To evaluate adherence to EPR-3 NAEPP 2007 guidelines we examined use of: supplemental oxygen, short acting beta agonist (SABA), ipratropium bromide, systemic steroids, close follow up, asthma education, asthma action plan (AAP) and inhaled corticosteroids (ICS). We examined the impact of our asthma order sets and equity of care using race and insurance provider.

**Summary of Results** 611 unique patients with 731 visits were seen during the study period. The majority of patients had a single visit (85%) with 10% having 2 visits and 4% having more than 2 visits. Patients were more likely to be male (57%) and older than 5 (54%). 49% of patients were black, 27% white, and 24% Hispanic. Of the 731 visits included, 74% were ED only, 16% required supplemental O2, and
6% required PICU care during admission. 79% of patients received a strong recommendation for close follow-up with their PCP, only 54% received an AAP, and 31% received a prescription for ICS. Patients who were admitted to the hospital were more likely to be discharged with ICS (73% vs 16% p<.001), receive an AAP (94% vs 40% p<.001), and a follow-up appointment (96% vs. 73% p<.001). An asthma order set was used 56% of the time, when an asthma order set was used patients were more likely to receive an AAP (p<.001), and follow-up appointment (p<.001). None of the patients seen by the asthma educator had more than one visit during the study time period (p<.001). Of note, patients identified an urgent care center (UCC) as their PCP 53% of the time, these patients were more likely to be seen in the ED only (86% vs 62% p<.001) and have more than one visit (15% vs 10% p=.058). With regards to race/ethnicity, more than 95% of Black and Hispanic children were treated in ED only while 70% of white children were seen in the ED only. There was no difference in AAP and close follow-up by race. Black and Hispanic children were more likely to have more than one visit during the study time period than white children (18%, 16% vs. 6% p=.005).

Conclusions Our treatment of acute asthma exacerbation was in line with current guidelines. Opportunities exist in assuring appropriate long-term care of asthma including: use of an AAP, establishing close follow-up and prescribing ICS especially in patients only seen in the ED. A large percentage of our population identified an UCC as their PCP suggesting the need to assist patients in finding a PCP. Of note, more frequent use of an asthma educator may decrease our revisit rate for asthma.

Conclusions The dedicated internal medicine team responsible for ICU transitions clearly reduced length of stay in the MICU. Early discharges from the MICU to the medical ward reduces costs. A previous study demonstrated that Hospital length of stay decreased without affecting mortality when an MICU based transition team continued to follow patients for 24 hours after transfer to the medical ward. The model studied here reduces stress on the MICU physician work force. We suggest further studies in the UMC ICU de-escalation of care process to reduce costs associated with long ICU step-down delays. The effects of this patient care model on other factors, including length of stay, re-admission and mortality, also require further study.

Hematology and oncology
Joint plenary poster session and reception
4:30 PM
Thursday, February 10, 2022

#178 EVALUATION OF QUALITY OF LIFE DATA REPORTING IN METASTATIC KIDNEY CANCER TRIALS

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10.1136/jim-2022-SRMC.176

Purpose of Study Health related quality of life (HRQoL) results provide information as to the general impact on a patient’s life that a therapy may have. Both statistical and clinical significance should be reported for HRQoL but not all studies present both pieces of information.

We sought to identify if there is a difference in the frequency of the presentation of statistical significance of HRQoL versus clinical significance of HRQoL in phase III studies of investigational agents in metastatic renal cell carcinoma reporting longitudinal results of overall HRQoL.

Methods Used A Medline search using the MESH term ‘Kidney Neoplasms’ and filtering for Phase III clinical trials was conducted. The articles were reviewed and those studies which included longitudinal results of overall HRQoL in phase III studies of investigational agents in metastatic renal cell carcinoma were included in the analysis. The binomial test was used to calculate a z-score, with the frequency of the reporting of statistical significance used as the expected probability of reporting of clinical significance.

Summary of Results 31 phase III trials were able to be included in the analysis. Of these, 26 (83%) reported if a result was statistically significant and 21 (68%) reported if a result was clinically significant. Due to the small sample size the data did not meet the requirements for a z-test.

Conclusions There is a nominal increase in the frequency of the presentation of statistical significance of HRQoL versus clinical significance of HRQoL in phase III studies of investigational agents in metastatic renal cell carcinoma reporting longitudinal results of overall HRQoL. However, the small sample size prevented the planned statistical analysis from being able to be reliably performed.
Purpose of Study: To highlight the importance of a thorough work-up for new onset heart failure in patients treated with doxorubicin.

Methods Used: Review of Electronic Health Records and literature review.

Summary of Results: A 59-year-old female with PMH of hypertension was diagnosed with left breast cancer. She underwent a modified radical mastectomy and pathology showed a stage III breast cancer. Transthoracic echocardiogram (ECHO) showed left ventricular (LV) hypertrophy with normal cardiac function (left ventricular ejection fraction, LVEF > 55%). Electrocardiogram (ECG) showed LV hypertrophy and no additional abnormalities. She started adjuvant chemotherapy with dose-dense doxorubicin (D), cyclophosphamide, and paclitaxel. Cumulative dose of D was 240 mg/m². Two months after completing D, she presented with tachycardia. She reported 5 months of progressive dyspnea since beginning chemotherapy, followed by an acute worsening of dyspnea 2 weeks prior to presentation.

At presentation, brain natriuretic peptide was elevated. CXR showed signs of volume overload. ECG showed anteroseptal infarct of undetermined age. ECHO showed a LVEF of 25–30%. The patient was diagnosed with new onset heart failure (HF) with reduced ejection fraction (HFrEF) secondary to doxorubicin cardiomyopathy (DCMP). Following stabilization, she was discharged on goal-directed medical therapy for HFrEF and referred for follow-up with cardiologist. At follow-up, nuclear stress testing revealed a large mid-distal defect in the anteroseptal wall corresponding to left anterior descending artery (LAD) territory infarction. Left heart catheterization and coronary angiography showed 100% occlusion of the LAD and 80% of the left circumflex artery, suggesting ischemic cardiomyopathy as the true cause of this patient’s new onset HFrEF.

DCMP is a well-described cause of dilated cardiomyopathy. Dilated cardiomyopathy is defined by ventricular dilation with systolic dysfunction, in the absence of coronary artery disease, hypertension, valvular disease, or congenital heart disease. The absence of these conditions is required for the diagnosis of dilated cardiomyopathy and subsequently DCMP. Risk factors for DCMP include age (> 65 years), female gender, preexisting cardiovascular disorders, hypertension, smoking, obesity, diabetes and high cumulative dose. It is usually classified as acute (occurs during treatment), subacute (detected within 1 year) and chronic (detected years after exposure). The prognosis of DCMP is poor and therefore it is essential to rule out treatable causes of HFrEF.

Conclusions: Cardiomyopathy is a well described, but uncommon side effect of D. Symptomatic HF is seen in approximately 1% of patients. Our patient had several risk factors for DCMP. This case highlights the importance of thorough evaluation for the cause of newly diagnosed HF even when the etiology seems straightforward. While D is a well described cause of dilated cardiomyopathy, ruling out more common causes of LV dysfunction are necessary to make the diagnosis.

Case Report: Leukemia cutis is a rare condition characterized by infiltration of neoplastic cells into the epidermis and dermis with a characteristic dermatologic appearance. Leukemia cutis generally portends a poor prognosis in the setting of newly diagnosed blood cancers. Case A 31-year-old man without past medical history presented after 1 month of progressive dyspnea on exertion, worsening fevers, thirty pound unintentional weight loss and diffuse rash on all extremities and trunk. Physical exam was significant for fever, tachycardia and scattered petechia and ecchymoses on his bilateral upper and lower extremities. Initial laboratory findings were significant for leukocytosis (222,000) with 94% immature mononuclear cells and thrombocytopenia (8,000). Punch biopsy was performed and pathology returned leukemia cutis with myeloid features. Bone marrow biopsy was significant for acute myeloid leukemia with 86% large blastoid cells. Patient was started on induction chemotherapy with cytarabine and idarubicin resulting in slow resolution of rash.

Discussion: Leukemia cutis is a challenging diagnosis and rare presentation of leukemia. When coupled with a new diagnosis of acute myeloid leukemia, as in this patient, portends a worse prognosis. This patient presented in blast crisis with cutaneous involvement and new diagnosis of acute myeloid leukemia was made promptly based on bone marrow biopsy results. Prompt dermatologic consultation resulted in diagnosis of leukemia cutis based on punch biopsy. After initiation of induction chemotherapy (cytarabine and idarubicin), his cutaneous lesions subsided significantly.
with indirect bilirubin 1.80 mg/dL. Reticulocyte count 1.2%. Direct antibody coombs test was negative. Serum B12 level was 150 with Methylmalonic acid of 5.52umol/mmol. On peripheral blood smear 1–3 schistocytes per high power field, rare tear drop cells, and numerous hypersegmented neutrophils were observed. ADAMTS-13 activity level was 78%.

Plasmapheresis was held and B12 1000 mcg IM was given daily for 7 days, then weekly for 4 weeks, followed by monthly indefinitely. On hospital follow up 6 weeks later patient had complete resolution of his anemia and thrombocytopenia. Serum B12 level was >500. He was referred to gastroenterology for further evaluation of suspected B12 malabsorption etiology.

Though rare, B12 deficiency causing hemolytic anemia is a known disease process and should be considered in the differential for hemolytic anemia. The pathogenesis of low B12 causing hemolytic anemia is uncertain but it has been demonstrated in vitro that elevated levels of homocysteine can lead to endothelial damage likely resulting in hemolysis. Early recognition of this patient’s pseudo-TMA likely shortened his hospital stay and prevented unnecessary initiation of plasmapheresis.

### #182 CORRELATION BETWEEN INTUBATION AND PALLIATIVE CARE: WHAT IS THE TREND?

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**Purpose of Study**
Over the last twenty years there has been an increase in the number of endotracheal intubations. In that same time period, palliative care has emerged with a focus on quality of life and alleviating suffering in patients with chronic, severe illness. More recently societal guidelines, including the American Society of Clinical Oncology, have recommended early integration of palliative care. Hypothetically, earlier goals of care discussions could lead to less invasive interventions, such as intubation. With this focus on earlier intervention, we aim to study the correlation between inpatient palliative care consultation and intubations at our institution.

**Methods**
Utilizing a function of EPIC electronic medical record SlicerDicer, we were able to identify patients admitted to the University of Mississippi Medical Center with a co-occurrence of intubation and palliative care consult, examine patient demographics and calculate relative risk (RR).

**Summary of Results**
We first looked at intubations, which increased by 136% from 2012–2016 with the rate of change from 2017–2020 varying by only 1–2% a year. Next, we looked at palliative care consults. Since inpatient palliative care became available in 2017, the number of consults increased by 39% (264 to 367). We then analyzed 99,622 admissions from 2017–2020 to look for co-occurrences of intubation and palliative care consultation during the same admission. In the general population, excluding patients with a cancer diagnosis, co-occurrences increased by 86% from 2017–2020 (23 to 43). In cancer patients, co-occurrences increased initially by 600% from 2017–2019 (2 to 14), but then decreased by 35% in 2020. Based on this data, the RR of intubation and a palliative care consult during an admission was higher in non-cancer patients than cancer patients (RR 5.8, RR 2.3 respectively). The highest RR was seen in non-cancer patients less than 30 and 50–70 years old (RR 13.6, RR 7.8 respectively).

**Conclusions**
Overall, there was an increase in co-occurrences of intubation and palliative care consultation. This could be attributed to a growing palliative care service, but the excess RR in younger, non-cancer patients may point to the palliative care team being increasingly utilized in the acute, critically ill patient. Notably, co-occurrences in non-cancer patients increased compared to cancer patients in 2020, likely due to Sars-Cov2. Though co-occurrences increased in cancer patients overall, the decreased RR compared to non-cancer patients is promising. This could point to more sub-specialist involvement in inpatient palliative discussions and/or earlier goals of care discussions. There is still work to be done to emphasize earlier goals of care discussions in chronic illnesses, which could ultimately lead to a decrease in the number of co-occurrences of intubation and palliative care over time. Further investigation is needed to follow this trend.

### #183 DIAGNOSTIC DILEMMA: PRIMARY ORBITAL SQUAMOUS CELL CARCINOMA OR NOT?

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**Introduction**
Primary orbital squamous cell carcinoma (SCC) is extremely rare with only 9 cases reported in literature. Secondary squamous cell carcinoma of the orbit is more common, accounting for 6.8% of orbital tumors and is usually the result of local invasion from a cutaneous primary (eyelid, conjunctiva, lacrimal gland, sino-nasal tract etc.), perineural invasion or distant metastasis. Here, we present a case of SCC of the right orbit which poses a diagnostic challenge as to the origin of the tumor and optimal management strategy.

**Case**
The patient is a 60-year-old male with a history of right eye injury and subsequent blindness who presented with a large right orbital mass which has been growing for a few months. The patient was struck in his right eye with metal debris several decades ago. Biopsy confirmed a diagnosis of moderately differentiated squamous cell carcinoma. Within a month of presentation, the mass continued to further grow rapidly with involvement of the entirety of the right orbit with proptosis. Ulceration along the medial canthus were noted with intermittent mild blepharing. The patient was unable to move his eyelids. CT of the orbits demonstrated a large right orbital mass extending into orbital apex with intraconal & extraconal involvement extending into the supraorbital & infraorbital fissures. The globes & optic nerve were not identified. MRI of the brain was negative for intracranial involvement. CT Chest, Abdomen, Pelvis was negative for any distant metastasis. Decision was made to proceed with right orbital exenteration, parotidectomy, modified radical neck dissection, and free flap reconstruction. Histopathology showed a 6.1 cm invasive squamous cell carcinoma with tumor invasion into the globe, extraocular muscles, orbital fat and optic nerve. Lymphovascular and perineural invasion was present. All margins were negative for malignancy. He is staged as pT4aN0M0 SCC of the right orbit. He has tolerated surgery well and plan is to start adjuvant chemo-radiation with weekly cisplatin given the risk of recurrence in his case.
Abstract #183 Figure 1

Discussion The orbit does not contain squamous epithelium, which accounts for the rarity of the disease. Case reports have detailed primary orbital SCC from dermoid cysts, lacrimal gland cysts with squamous metaplasia and conjunctival cysts occurring after ocular surgery. Squamous metaplasia is a consideration in this patient secondary to chronic irritation from his eye injury. In further review of existing literature, we inferred that we might not be able to confirm where the SCC originated in such cases with de novo orbital mass. Orbital SCC is usually treated with surgery with radiotherapy or chemoradiation depending on the extent of tumor invasion and risk of recurrence.

Abstract #184 PRIMARY PULMONARY MELANOMA PRESENTING AS BRAIN METASTASIS

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Case Report Melanoma, a malignant tumor of pigment-producing cells, is a potentially fatal neoplasm most commonly arising from a cutaneous origin. However, cases arising from mucosal, ocular, and visceral sites are described. Here, we report a case of a primary melanoma of the lung with pulmonary and brain metastases.

A 42-year-old male with diabetes mellitus and a tobacco use disorder presented to the emergency department after a five-minute episode of aphasia associated with perioral tingling. Upon arrival, he was able to speak clearly, and he had no focal neurologic deficits. The remainder of his review of symptoms and physical exam was unremarkable. The differential diagnosis included seizure or transient ischemic attack. A non-contrast head CT revealed an acute focal hemorrhage within the left parietal lobe with a small subarachnoid component. MRI imaging further demonstrated a 1.5 cm ring-enhancing mass concerning for hemorrhagic metastasis. He was admitted. An awake craniotomy with tumor resection revealed a high-grade malignant neoplasm positive for MART1 and SOX10 and negative for GFAP, TTF-1, CK7, CK20, EMA, and CD34, which favored metastatic melanoma. This lesion was BRAF V600E positive and NRAS negative. Subsequent PET scanning revealed multiple FDG-avid pulmonary nodules, with an endobronchial mass amenable to biopsy. Bronchoscopic biopsy of this mass demonstrated malignant cells positive for MART1 and SOX10 consistent with malignant melanoma and suggested that this was the primary lesion. A specialty-conducted dermatologic evaluation failed to reveal other potential primary sites. Initial therapy consisted of gamma knife radiation to the post-resection brain tumor bed and immunotherapy with nivolumab and ipilimumab. Two months later, an MRI showed multiple new intracranial metastases, and a PET scan showed an increase in the size of the endobronchial lesion and an increase in the number and size of the metastatic lung nodules. The patient has completed four cycles of nivolumab/ipilimumab and is being evaluated for dabrafenib/trametinib combination therapy.

Primary malignant melanoma of the lung is rare, accounting for 0.01% of all lung neoplasms. Though the pathogenesis of these tumors remains obscure, it is believed that primitive melanoblasts may migrate to the viscera during embryogenesis. New therapies have emerged for metastatic cutaneous melanoma that target specific kinases and protein receptors such as PD-1, CTLA-4, BRAF, and MEK. However, there is a paucity of data on the efficacy and safety of these treatments with non-cutaneous metastatic melanoma. This case illustrates the diagnostic and therapeutic challenges associated with this rare pathological entity.

Abstract #185 STAGE II ENDOMETRIAL CARCINOMA WITH FALSE POSITIVE PARA-AORTIC LYMPHADENOPATHY: THE IMPORTANCE OF PRETEST PROBABILITY

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Purpose Case report to increase awareness of pretest probability in the presence of abnormal imaging findings

Methods Review of Electronic Health Records and literature review

Results This patient is a 61-year-old female with a history of intermittent vaginal spotting since her early 50’s. On physical exam, normal vaginal atrophy was observed, and bi-manual recto-vaginal exam showed normal-sized uterus without adnexal masses or nodularity. A Pap-smeared with dilution and curettage revealed endometrial carcinoma, endometrioid type with squamous differentiation. Hysterectomy with bilateral salpingo-oophorectomy, bilateral pelvic sentinel biopsy, and bilateral pelvic lymphadenectomy was performed. Pathology showed a grade 1 endometrioid carcinoma with greater than 50% myometrial invasion. The cervical stroma contained a 2 mm focus of tumor, and all 18 pelvic lymph nodes were negative meriting a diagnosis of Stage II endometrial carcinoma. Vaginal cuff brachytherapy, a non-morbidity treatment, was offered as adjuvant therapy.

Staging PET/CT scan showed a hypermetabolic left para-aortic lymph node at the renal level suspicious for active neoplastic disease. Based on this the recommendation for adjuvant treatment was changed to extended field radiation and systemic chemotherapy, a treatment associated with significantly more toxicity. However, it was discussed that this was an unusual presentation and further evaluation was required. A CT-guided biopsy of the left para-aortic lymph node was performed and showed no malignant cells. Patient received vaginal brachytherapy. PET/CT three months later showed persistent, unchanged metabolically active left para-aortic lymphadenopathy. A repeat biopsy showed no malignancy. The scan also showed persistent chronic nephrolithiasis and obstructive uropathy of the left kidney with severe parenchymal atrophy. Ureteroscopic stone extraction with holmium laser lithotripsy and stent placement was performed. Patient remains without evidence of cancer recurrence 30 months after surgery.

Conclusions This case shows the importance of using the pre-test probability when interpreting test results. PET/CT
scan is highly sensitive and specific for endometrial cancer. However, para-aortic lymph node metastasis without pelvic lymph node metastasis from endometrial carcinoma is very rare (low pre-test probability). This low pre-test probability raised the concern about the PET/CT findings. The patient was spared the toxicity of unnecessary chemotherapy and extended field radiation. It was concluded that the findings on PET scan were related to the inflammatory process in the kidney associated with the nephrotic syndrome and chronic obstructive uropathy. This case shows the importance of taking into the account the pre-test probability when interpreting any test.

#186 A DIFFERENT TAKE ON CARDIO-ONCOLOGY: METASTATIC ANGIOSARCOMA PRESENTING AS A PRIMARY CARDIAC TUMOR

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Introduction Cardiac tumors are very rare, mostly presenting as distant metastases. Only about 0.5% present as primary cardiac tumors and of those, the majority are benign, typically atrial myxomas (1). Angiosarcomas can rarely present as primary cardiac tumors and tend to be very aggressive. We present a case of a patient who presented with new coronary artery disease complicated by recurrent pericarditis and ultimately found to have metastatic angiosarcoma originating from the right atrium.

Case Report Our patient is a 57 year old African-American male with a past medical history of hypertension and poly substance abuse who initially presented in January 2021 with chest pain and found to have acute coronary syndrome. He was taken for cardiac catheterization and percutaneous intervention (PCI) was performed with stent placement in left anterior descending (LAD) artery. A few weeks after his PCI, patient was readmitted for pericarditis and also complained of fatigue and weight loss, so computerized tomography of the chest, abdomen and pelvis (CT CAP) was obtained to rule out malignancy and it did not show any evidence of disease. Over the next few months, our patient had recurrent chest pain and weight continued to decline as fatigue worsened. He finally represented to the emergency room in July 2021 with chest pain and CT CAP was again obtained, only this time showing a large cardiac tumor abutting the right atrium and ventricle and evidence of metastatic disease throughout his vertebra, lungs and liver. Patient was referred to Oncology and had a biopsy of a bone lesion done via interventional radiology (IR), which showed metastatic angiosarcoma. We discussed palliative chemotherapy with single agent paclitaxel and initially patient agreed but there were delays over the next few weeks. By the time patient was able to make it back to clinic for treatment in early September, he had lost considerable weight and was wheelchair or bed bound for the majority of the day due to fatigue, weakness and pain. After further discussion, he decided to pursue hospice at home with family.

Discussion Primary cardiac tumors are rare but when present, can be very aggressive. Angiosarcomas account for about 30% of primary malignant cardiac tumors and are typically very aggressive with a median overall survival of 4–6 months when unresectable (2). Typical treatment is surgical when feasible but chemotherapy and radiation therapy are often used, as well. Chemotherapy typically consists of taxane or anthracycline-based regimens (3). A small single arm study demonstrated a 25% (4/16) response rate for angiosarcomas to the combination of nivolumab and ipilimumab after prior chemotherapy which may lead to evaluations of this immunotherapy combination in first line therapy (4). In summary, prompt diagnosis and multidisciplinary treatment planning is important when taking care of patients with primary cardiac tumors.

#187 PSEUDOTHROMBOTIC MICROANGIOPATHY AND PANCYTOPENIA AS A RARE PRESENTATION OF VITAMIN B12 DEFICIENCY

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Case Report A 62-year-old male presented to our hospital with a few days of worsening dyspnea, associated with numbness in the left lower extremity, dizziness and transient brief chest pain that was described as a sharp intermittent pain. He denied any fever, chills, nausea, vomiting, diarrhea, headache, or recent ill contacts. The patient also denied any family history of blood or bone marrow disease. He had been released from incarceration 2 days prior to the presentation.

Complete blood count revealed pancytopenia with hemoglobin of 6.8 g/dL, MCV of 112 fL, white blood cell count of 1.2 K/uL, and platelet count of 78 K/uL. The patient was transfused with packed red blood cells and then admitted to the inpatient medicine ward for further treatment and evaluation. Blood smear confirmed the pancytopenia with severe neutropenia, macrocytosis, and moderate thrombocytopenia. In addition, it showed erythrocytes with marked poikilocytosis including occasional schistocytes and teardrop cells.

His lab investigations were notable for B12 level below 150 pg/mL (Normal range 211–911), fibrinogen of 144 mg/dL, and haptoglobin less than 10 mg/dL, LDH of 1013 U/L. Other lab studies including troponin, ferritin, TIBC, serum iron, vitamin B1, PT/INR, PTT, SPEP, COVID-19, EBV, CMV, HIV, Hepatitis A, B, and C were all unrevealing. Abdominal ultrasound was significant for splenomegaly. CT head and chest X-ray were unremarkable. After starting treatment with cobalamin therapy, the patient has shown improvement in terms of cell counts, resolution of hemolysis. He also reported significant improvement in tingling and dizziness. All this confirms the diagnosis.

Abstract #187 Figure 1
Abstracts

Vitamin B12 deficiency manifestations can vary between asymptomatic, mild, and severe. In our case, the patient presented with pseudothrombotic microangiopathy and pancytopenia. Both are rare and serious manifestations of vitamin B12 deficiency. Physicians should be aware of cobalamin deficiency as one of the etiologies for pancytopenia and pseudothrombotic microangiopathy. Therefore, an early recognition and treatment is crucial.

**#188 CATASTROPHIC ANTIPHOSPHOLIPID SYNDROME COLLIDES WITH REFRATORY SECONDARY EVANS SYNDROME: A THERAPEUTIC DILEMMA**

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**Case Report** Antiphospholipid syndrome (APS) is an autoimmune disorder characterized by both venous and arterial thromboses in the setting of persistent antiphospholipid autoantibodies. APS can be associated with mild thrombocytopenia but has rarely been seen in combination with Evans syndrome (autoimmune hemolytic anemia, immune thrombocytopenia and/or neutropenia). Here we present a case of the therapeutic dilemmas faced when these two syndromes combine.

A 36-year-old female with antiphospholipid syndrome, cirrhosis due to Budd-Chiari syndrome (BCS), and recurrent pulmonary emboli on anticoagulation presented with right upper quadrant abdominal pain and shortness of breath in addition to a reported six-month history of fatigue, fevers, night sweats, and unintentional weight loss. The patient was pancytopenic and coagulopathic with elevated but stable liver enzymes of a mixed injury pattern. Imaging confirmed known hepatic venous thrombosis with progressive hepatic infarctions. The patient was not a candidate for IR intervention, and liver transplant evaluation was initiated. A mixed autoimmune hemolytic anemia (AIHA) was confirmed by blood smear demonstrating spherocytes without schistocytes in combination with both warm and cold antibodies on Coombs’ testing. A bone marrow biopsy later revealed hypercellularity with increased megakaryocytes consistent with immune-mediated thrombocytopenia (ITP). AIHA and ITP in the setting of APS are congruous with secondary Evans syndrome. The patient initially received mg/kg prednisone without response. She was then transitioned to IV Ig for six doses, romiplostim weekly for three weeks, rituximab weekly, and Lastly, plasma exchange. Despite progression of therapy and frequent transfusions, platelets remained unresponsive with worsening hemolytic anemia. The clinical course was further complicated by significant bleeding involving diffuse alveolar hemorrhage resulting in acute hypoxic respiratory failure requiring mechanical ventilation and recurrent gastrointestinal bleeding. The patient developed widespread venous thromboses with our inability to anti-coagulate, resulting in multi-organ failure including cardiogenic shock and acute renal failure consistent with catastrophic antiphospholipid syndrome (CAPS). Ultimately, the patient suffered diffuse dural venous thromboses, cerebral herniation, and was subsequently palliatively extubated.

A small subset of APS patients will develop CAPS manifested by intravascular thrombosis resulting in multiorgan failure with high mortality. Treatment focuses on limiting thrombosis and suppressing the cytokine cascade. This case demonstrates the formidable processes of an immune system gone awry despite aggressive treatment with well-validated therapeutic options and the dilemma of anticoagulation with active bleeding. Lastly, we are uncertain if more expeditious plasma exchange or the addition of cyclophosphamide or eculizumab could have made an impact on this patient’s care.

**#189 A CASE OF ACQUIRED HEMOPHILIA A DUE TO FACTOR VIII INHIBITOR**

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**Introduction** Acquired Hemophilia A (AHA) is a rare and typically incidentally found by either bleeding complications after a GI procedure, postpartum or spontaneous bleeding into the skin and soft tissues.

**Case Report** 72-year female with a history of coronary artery disease s/p percutaneous coronary intervention with drug eluting stent (DES) two months prior, hyperthyroidism and rheumatoid arthritis, was admitted for acute blood loss anemia. She was on aspirin and clopidogrel given the recent DES. She has a 1-week history of fatigue, bloody diarrhea and epistaxis. She was hemodynamically stable. Lab values showed WBC 10.2 k/mm3, hemoglobin 5.5 mg/dL, hematocrit 18%, platelet 113 k/mm3, MCV 100 fl, reticulocyte 14%, smear showed slight macrocytosis, B12 1021 pg/mL, folate 36.6 ng/mL, ferritin 66.4 ng/mL, transferrin saturation 17%, LDH 450 u/L, haptoglobin 225 mg/dL, PT 14 seconds, INR 1.0, PTT 85 seconds. Two units of packed red blood cells were transfused urgently. Post transfusion hemoglobin was 8.1 mL/dL. Gastroenterology was consulted for suspected upper gastrointestinal bleed. Esophagogastroduodenoscopy showed a Dieulafoy lesion in the gastric body and greater than 20 bleeding AVMs in the duodenum/jejenum. These lesions were ablated successfully. A few hours after the procedure, the patient complained of severe abdominal pain. An emergent CT abdomen w/o contrast showed a new duodenal intramural hematoma. General Surgery did not recommend surgical intervention given very poor surgical candiate. Aspirin and clopidogrel was stopped. Meanwhile, the mixing study result came back showing an abnormal mixing pattern not corrected by incubation. Factor VIII was found to be <1% and Bethesda Titer assay was >30. This study consistent with Acquired Hemophilia A secondary to Factor VIII inhibitor. Hematology/Oncology was consulted and the patient was started on high dose prednisone, recombinant FVIII and weekly rituximab infusions for immunosuppression.

**Discussion** AHA is a rare entity of bleeding disorders that is often a missed diagnosis. 50% of diagnosed cases are idiopathic with spontaneous bleeding, with the rest being due to occult malignancy, autoimmune disease, infections or post-partum bleeding. Severe bleeding can occur in up to 70% of affected patients with mortality as high as 5–10%. Unlike Congenital Hemophilia, hemarthrosis is not a part of the syndrome. Rather, spontaneous bleeding into skin and soft
tissues, intramural hematomas and mucus membranes is seen. Abnormal mixing studies should lead to investigation of which bleeding factor is being consumed/inhibited, commonly factor VIII or IX by investigating the factor’s activity. Bethesda Titer assay will be useful for levels of the inhibitor itself. Conclusion Isolated aPTT should prompt clinicians to order mixing studies to evaluate etiology of the prolonged coagulation cascade. AHA can lead to devastating bleeding sequelae, therefore prompt recognition and treatment of AHA can be lifesaving.

#190 THERAPEUTIC CHALLENGES IN TREATING A NEWLY DIAGNOSED APLASTIC ANEMIA IN A PATIENT WITH COEXISTENT COVID-19 INFECTION
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Introduction Aplastic anemia is a syndrome of bone marrow failure characterized bone marrow hypoplasia. Immunosuppressive therapy is one modality of its management. We report a case in which use of this modality was hindered by lack of data showing the effects of its use during the novel COVID-19 infection.

Case presentation A 20-year-old man with a newly diagnosed pancytopenia presented with fever, cough, headaches, and exertional dyspnea. When his vital signs were obtained, he was afebrile but his blood pressure, heart rate and oxygen saturation were within normal range. Physical exam was unremarkable. Laboratory tests showed that the white blood cell count was 1.42 K/µL, hemoglobin level was 9.7 g/dl, and platelet count was 13 K/µL. He was tested for COVID-19 infection and was found to be positive. A peripheral blood smear showed pancytopenia. A bone marrow biopsy showed hypocellular marrow with trilineage hypoplasia. Flow cytometry showed no significant trilineage abnormalities. Vitamin 12 and folate levels were within normal range. Testing for antinuclear antibodies, rheumatoid factor, HIV, hepatitis C, and hepatitis B were negative. Ultrasound of the abdomen showed no enlargement of the spleen. The PNH FLAER test was done twice and was inconclusive possibly due to hemolysis or severe pancytopenia. The patient was diagnosed with aplastic anemia, but the cause was unclear. Anti-thymocyte globulin, cyclosporine, and steroids were considered for treating the aplastic anemia, but there was concern about their unknown effect on his active COVID-19 infection. Immunosuppressive therapy was decided to be held until he was cured from his COVID-19 infection, and he was discharged after his blood cell indices improved.

Discussion Being an infection caused by a novel virus, COVID 19 can cause a therapeutic dilemma when no data are available about the effects of certain therapies on the infection. In our patient, immunosuppressive therapy was needed to treat the aplastic anemia but there was no published literature on the effect of this treatment on the course of the infection. This should become less of an issue with time as data surrounding COVID-19 infection and its effects on other diseases and treatment modalities grow.
found in these lesions. Sarcoidosis is a systemic granulomatous disease characterized by the development of non-caseating granulomas mostly in the lungs and hilar lymph nodes but can also involve skin, eyes, and other organ systems. The relationship between sarcoidosis or sarcoid-like reaction and breast cancer has been reported mainly as case series and case reports.

Case Report A 45-year-old female patient presented to the clinic complaining of severe bilateral worsening leg pain for several weeks that increased with movement and improved with rest. She has a history of hypothyroidism treated with levothyroxine. Physical examination was significant for bilateral weak peripheral pulsations and cold lower extremities. Initial laboratory workup was normal. Peripheral angiogram revealed complete occlusion of the left common iliac artery and the right common femoral artery.

She underwent bilateral femoral artery exploration, open mechanical thrombectomy, stenting of the left common iliac artery, and angioplasty of the left common femoral and common/external iliac arteries (figure 1). Pathological examination of the removed tissue of the arteries confirmed to be thrombi. Hematology was consulted for work-up of a hypercoagulable state. She had no personal or family history of previous clots or miscarriage. Hypercoagulable work-up came back negative, but she was started on long-term anticoagulation. On follow-up in the clinic, she complained of a breast lump, mammogram with US followed by biopsy revealed bilateral invasive ductal carcinoma. She refused any surgical or medical interventions.

Patients with malignancy are at higher risk for thrombosis. Venous thromboembolism is a frequent complication in these patients and usually occurs after the diagnosis of cancer is confirmed. Thrombosis as the initial presentation of malignancy is uncommon with arterial thrombosis being more so, especially in a patient without atherosclerosis or cardiovascular risk factors.

#193 POST-OBSTRUCTIVE ACUTE KIDNEY INJURY DUE TO RETROPERITONEAL FIBROSIS: AN UNUSUAL PRESENTATION OF ESOPHAGEAL SIGNET RING CELL CARCINOMA

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Introduction Signet ring cell carcinoma (SRCC) is an aggressive and rare form of mucin-producing adenocarcinoma with an estimated incidence rate of 0.04–0.11 cases per 100,000 individuals per year. SRCC most commonly arises from the gastrointestinal tract and has a higher prevalence among men and smokers. The most common sites of metastasis remain liver, lung, and distant lymph nodes. The low disease incidence and aggressive nature present a diagnostic challenge as early signs and symptoms can be subtle. This case highlights an unusual presentation of SRCC: acute kidney injury (AKI) due to retroperitoneal fibrosis (RPF).

Case Report A 67-year-old male presented to the emergency department with complaints of abdominal pain and reduced urine output. Initial evaluation was notable for AKI with elevated blood pressure readings. The initial concern was for obstructive urolithiasis prompting evaluation via computed tomography (CT) urogram. The study was notable for bilateral hydronephrosis, bilateral proximal hydroureter, strictureing of the mid to distal ureters, and retroperitoneal lymphadenopathy and fibrosis. Cystoscopy with retrograde cystoureterogram confirmed ureteral stricture. Bilateral nephrostomy tubes were placed with resolution of his AKI. Differential diagnosis at this time included both malignant and autoimmune RPF. Immunoglobulin subtyping (with IgG and IgG4) and antinuclear antibody (ANA) screening were unremarkable. Positron emission tomography/computed tomography (PET/CT) was notable for PET avidity throughout his retroperitoneum. There was also avidity in the distal esophagus favored to represent inflammatory changes. CT-guided biopsy of the avid retroperitoneal lymph nodes was notable for adenocarcinoma with signet ring cell features with positive pankeratin, CK7, CK20, and CDX-2 and negative for TTF-1, PAX-8, GATA-3 and PSA. Follow-up esophagogastroduodenoscopy (EGD) was notable for findings consistent with reflux esophagitis were noted in the distal esophagus. Biopsy of the inflamed tissue was also notable for adenocarcinoma with signet ring cell features.

Discussion Early manifestations of esophageal SRCC, like other esophageal carcinomas, are often subtle. Symptoms such as regurgitation, dysphagia, hoarseness, weight loss, and iron deficiency from occult blood loss usually denote locally invasive disease. Later findings are most often dependent on location of metastasis, which is usually liver, lung, and lymph nodes. This patient was diagnosed with esophageal SRCC only after being found to have findings of RPF due to metastasis to retroperitoneal lymph nodes on cross sectional imaging. Early diagnosis of SRCC remains critical as prognosis of metastatic disease is grim with 5-year survival of 1.5% and median survival of 7.9 months. On review of literature, there have only been two reported cases of SRCC presenting as retroperitoneal fibrosis highlighting this case’s importance and contribution to the medical community.
#194 PRIMARY DIFFUSE LARGE B-CELL LYMPHOMA OF THE CECUM

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Purpose of Study Case report of primary diffuse large B-cell lymphoma (DLBCL) of the cecum in a patient with underlying ischemic heart disease being treated with R-CHOP chemotherapy

Methods Used Review of Electronic Health Records and literature review

Summary of Results A 73-year-old male with underlying ischemic heart disease and history of renal cell carcinoma presented with persistent productive cough and shortness of breath. Chest CT found new noncalcified nodules in both lungs, and further PET scan imaging revealed circumferential cecal colonic wall thickening with hypermetabolic activity, in addition to the bilateral pulmonary nodules. His last cecal colonic wall thickening with hypermetabolic activity, in addition to the bilateral pulmonary nodules. His last colonoscopy had been 3 years prior with only finding of benign polyps. CT-guided biopsy of a pulmonary nodule showed neoplastic cells positive for CD45, CD20, PAX5, CD10 and BCL6, and negative for SOX11; the Ki-67 index was 75–80%. The patient underwent a colonoscopy which found an infiltrative, ulcerated and fungating 5 cm mass with stigmata of recent bleeding of malignant appearance in the cecum, causing a partial obstruction. Cold forceps biopsies were performed and neoplastic cells were positive for CD20, CD10, BCL6, and MYC (50%), and negative for SOX11, CD23, BCL2, and EBER; Ki-67 index was > 90%. Fluorescence in-situ hybridization (FISH) studies for BCL2, BCL6, and MYC were negative for rearrangement, which were performed to rule-out double-hit lymphoma. The patient was diagnosed with high-grade DLBCL with germinal center phenotype of colonic origin and metastasis to the lungs. The patient began treatment with R-CHOP-21 chemotherapy, and after the first two rounds of treatment, PET CT revealed significantly decreased size and metabolic activity of cecal mass with max SUV in the cecum measuring 8.7, which was previously 26.2 pre-treatment. He has tolerated the R-CHOP relatively well with only one episode of angina-type symptoms. The GI tract is the predominant site of secondary extranodal non-Hodgkin lymphoma (NHL). Primary lymphomas of the GI tract are rare, accounting for only 1–4% of malignancies arising in the stomach, small intestine, or colon. Primary colorectal lymphoma is even more rare, accounting for only 0.3% of large intestinal malignancies and 3% of GI lymphomas. The cardiotoxic effects of doxorubicin must be accounted for in patients with underlying cardiac disease when administering R-CHOP. There is limited data available from small trials that can be used to guide both prevention and management of cardiotoxicity. Additionally, there are no randomized trials for chemotherapy treatment of DLBCL that includes patients of underlying cardiac disease.

Conclusions This case highlights the treatment considerations for primary colorectal DLBCL in an older patient with underlying ischemic heart disease. Due to the rarity and severity of primary colorectal lymphoma, there is scarce literature regarding the outcome of chemotherapy treatment options, especially in patients with underlying risk factors.

#195 THE IMPORTANCE OF RECOGNIZING GROWING TERATOMA SYNDROME (GTS): A RARE COMPLICATION OF NON-SEMINAMATOUS GERM CELL TUMORS (NSGCT)

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Introduction Growing teratoma syndrome (GTS) is a rare complication of non-seminomatous germ cell tumors (NSGCT) seen in testicular and ovarian cancers. According to the diagnostic criteria first described in 1982 GTS is defined by the following criteria: normalization of elevated serum alpha fetal protein (AFP) and human chorionic gonadotropin (HCG) levels, tumor growth during or after appropriate chemotherapy for NSGCT, and the exclusive presence of mature teratoma in the resected specimen. The incidence of GTS has been reported to be 1.9–7.6% in testicular cases and around 12% in ovarian cases (1,2).

Case A 32-year-old man with a past medical history of schizophrenia and polysubstance abuse was evaluated for a right testicular nodule. The ensuing workup showed a complex and reviewing the case, GTS was highly suspected and further analysis of the correlation of time to progression (TTF) with overall survival (OS) was performed. The incidence of GTS has been reported to be 1.9–7.6% in testicular cases and around 12% in ovarian cases (1,2).

#196 A CLASSIC CASE OF A RARE HEMATOLOGIC DISORDER

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Case Report IgM multiple myeloma (MM) is an exceptionally rare hematological disorder comprising less than 0.5% of MM cases. Diagnosis of IgM MM can often be a challenge in differentiating from the more prevalent disorder of Waldenstrom macroglobulinemia (WM), in which both have an IgM monoclonal gammopathy. The importance of distinguishing between
these two disorders is imperative since treatment and prognosis differ appreciably.

A 48 year-old female presented to the emergency department with progressive low back pain. She previously had a traumatic fall resulting in a T6 fracture four months prior while sledding that required no surgical intervention. She wore a back brace without any reported issues until 5 weeks prior to being evaluated in the emergency room. She had no previous past medical history. Physical examination was significant for thoracic-lumbar tenderness to palpation. Magnetic resonance imaging (MRI) of her spine showed multiple osseous lesions and pathologic fracture of T6 with epidural extension of neoplasm but no cord compression. No hepatosplenomegaly was reported on imaging. Labs were significant for anemia, hypercalcemia, and acute kidney injury. Subsequent labs revealed a kappalambda free light chain ratio elevated at 518 and serum protein electrophoresis showed a monoclonal protein spike of 2.8 g with an immunofixation showing IgM kappa protein. A bone marrow (BM) biopsy showed 68% kappa restricted plasma cells. Cyto genetics revealed a t(11;14) consistent with a CCND1/IGH gene fusion and was negative for a MYD88 L265 mutation. She was diagnosed with MM. Treatment with lenalidomide, bortezomib, and dexamethasone was initiated. Patient responded to treatment with improvement in renal function and is undergoing evaluation for an autologous stem cell transplant.

Establishing a diagnosis of IgM MM can be challenging given rarity of the disease. IgM MM presents as any other type of MM, and the diagnosis of IgM MM requires the presence of an IgM monoclonal gammapathy with 10% or more of clonal plasma cells on BM biopsy, along with at least 1 myeloma defining event. Myeloma events are defined by the acronyms CRAB (hypercalcemia, renal insufficiency, anemia, and bone disease) and SLiM (sixty% plasmacytosis on BM, light chain ratio >100 or <0.01, and 1 lesion on MRI). All CRAB and SLiM criteria were present in this case confirming the diagnosis of MM. WM is an IgM secreting lymphoblastic lymphoma that presents with signs and symptoms of anemia, lymphadenopathy, hepatosplenomegaly, neuropathy, and hypercalcemia. The presence of t(11;14) found in our patient which leads to cyclin D1 dysregulation is common in IgM MM, but absent in WM. Somatic mutation MYD88 L265 is observed in patients with WM. This case demonstrates the importance of a thorough diagnostic approach including physical exam, labs, pathology, imaging, and cytogenetics in patients presenting with IgM monoclonal gammapathy to correctly identify patients with IgM MM vs WM.

#197 ANALYSIS OF THE CORRELATION OF TIME TO TREATMENT FAILURE WITH OVERALL SURVIVAL VERSUS CORRELATION OF PROGRESSION-FREE SURVIVAL WITH OVERALL SURVIVAL

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10.1136/jim-2022-SRMC.195

Purpose of Study In cancer drug trials, improvement in overall survival (OS) is a meaningful measure of drug efficacy to patients. Measuring OS requires large patient numbers and prolonged follow up. To address this limitation, studies have utilized endpoints such as progression free survival (PFS) and time to treatment failure (TTF) as surrogates of an OS benefit. PFS is defined as time from randomization to objective tumor progression or death and is felt to correlate more with OS as it includes death. TTF is defined as the time from randomization to treatment discontinuation for any reason and has been suggested as a practical endpoint using real-world evidence, although it is not commonly used in clinical trials. Hazard ratio (HR) is also frequently used to estimate the treatment effect for time-to-event end points such as OS, PFS, and TTF in randomized clinical trials. We conducted a study to examine the correlation between HR for TTF and HR for OS versus the correlation between the HR for PFS and the HR for OS in a publicly available database.

Methods Used A search of studies in clinicaltrials.gov, last performed on October 7, 2021, was done to identify all trials reporting HR of OS, PFS and TTF – trials not reporting any of these measures or trials reporting values other than the HR for each of these measures were excluded. Trials with an upper bound of the 95% confidence interval of overall survival that was >10 were excluded due to the uncertainty associated with these results. Trials reporting TTF, PFS, and OS for multiple arms were included with each unique set of comparisons considered an individual study. The correlation of OS with TTF, OS with PFS, and TTF with PFS was calculated in Microsoft Excel. The correlation between OS with TTF was compared to the correlation between OS with PFS by the test of the difference between two dependent correlations with one variable in common.

Summary of Results A search of clinicaltrials.gov identified 147 studies that reported information on OS, TTF, and PFS. After excluding studies not meeting the above criteria, 39 sets of pairs of OS-TTF, OS-PFS, and TTF-PFS were able to be analyzed. The correlations between TTF-OS, PFS-OS, and TTF-PFS were:

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The correlation of TTF-OS is statistically significantly greater than the correlation between PFS-OS (two sided p-value: 0.02).

Conclusions This analysis of publicly available results of clinical trials found statistically significant difference between the correlation of the HR for TTF with OS versus the correlation of the HR for PFS with OS, with the correlation for TTF with OS being the stronger correlation. Limitations of this work include the heterogeneity of the studies and the small sample size. Further work is needed to validate this finding in an independent dataset. If validated, it would suggest that monitoring TTF would serve as a stronger correlate of OS than PFS does.

#198 ACUTE RESPIRATORY DISTRESS SYNDROME AFTER EXPOSURE TO CARFILZOMIB (KYPRISOLIS)

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10.1136/jim-2022-SRMC.196

Case Report

Introduction Plasma cell leukemia is very rare and an aggressive form of leukemia with a poor prognosis. Interim analysis of a phase II trial (EMN12/HOVON 129) using carfilzomib, lenalidomide, and dexamethasone (KRd) in
patients with PCL ≤65 years showed a very good partial response or greater response in 80% with 33% achieving at least a complete response. Carfilzomib (Kyprolis™) is a proteasome inhibitor and is associated with ARDS and acute respiratory failure in 2% of the cases per FDA package insert. We present a case report of acute respiratory distress syndrome to be potentiated 2/2 to carfilzomib infusion.

Case A 58-year-old male with a history of hypertension, recent COVID-19 infection and new diagnosis of untreated Plasma Cell Leukemia presented to our hospital with worsening chest pain, fatigue and dyspnea. Vitals on admission were notable for BP 158/88, HR 101, Tmax 99°F and sating 100% on room air. Peripheral blood exam showed WBC: 27.7 x10⁹/L, Hb: 8 gm/dl, platelet: 121000, corrected calcium:13.3 mg/dl, creatinine: 1.16 mg/dl, total protein:11 g/dl, uric acid: 8.2 mg/dl, B-2 micro globulin: 5.8 mg/L, Mspike: 5.6 g/dl, IgA lambda type. CT Chest abdomen pelvis revealed diffuse lytic bone lesions. Due to inability to obtain bone marrow biopsy from limited resources after Hurricane Ida and aggressive nature of the cancer, treatment was initiated based off a previous flow cytometry from the peripheral blood which showed 55% plasma cells. Patient started on chemotherapy with Cyclophosphamide, Carfilzombiz, and dexamethasone with plans to change to Revlimid from cycle 2. He was also started on fluid hydration and Zometa for hypercalcemia. Patient also received aggressive blood pressure control with metoprolol, amlodipine and IV labetalol as needed. After 2nd dose of Kyprolis, he developed acute hypoxic respiratory distress and was initiated on Bipap. Chest Xray was concerning for fluid overload and/or evolving pneumonia. He was supported with diuretics and broad-spectrum antibiotics; however, he eventually was intubated. He was also started on high dose steroids. Repeat CT chest was negative for thrombosis, but showed extensive bilateral pleural -parenchymal opacities. He had a bronchoalveolar lavage with no obvious infection. Over the next 2 days, patient showed improvement and eventually self-exubated. After his recovery, we continued chemotherapy with Kyprolis and he has tolerated it without issues.

Discussion The etiology of ARDS is likely multifactorial, however Kyprolis may have played a major role in his decompensation mainly due to the timing and known side effects of the medication. Based on a study from 2018, only 5 case reports of Kyprolis-associated non-infectious progressive lung injury were found at that time. Clinicians should be mindful of Kyprolis induced lung injury and emphasize the need for tight blood pressure control and careful administration of intravenous fluids to decrease the possibility of lung injury.

HOLIDAY HEMOGLOBINURIA: PAROXYSMAL COLD HEMOGLOBINURIA IN COOLER MONTHS IN A PATIENT WITH TREATED SYPHILIS

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10.1136/jim-2022-SRMC.197

Case Report Our patient is a 61-year-old woman who came to our university hospital’s attention in January 2018 with an acute presentation of abdominal and back pain, nausea, and vomiting. She was discovered to have significant kidney disease and nephrotic range proteinuria. Work-up yielded a positive RPR, which was supported by a reactive Treponema pallidum particle agglutination study and by her report of having been treated for syphilis with penicillin in the distant past.

She returned to the hospital in January 2019 with hypoglycemia and acute kidney injury following cocaine consumption. Her hemoglobin was found to be 5 g/dL. The antibody screen before transfusions was positive. It was noted that ‘the agglutination pattern may reflect an additional emerging antibody or a nonspecific reaction. Antibody specificity may become clear upon further testing.’

Hemoglobin dropped from 8.3 g/dL to 5.5 in two days several days into the admission, shortly after a urine drug screen was positive for cocaine. Hemolysis labs were notable for LDH of 1168 U/L and haptoglobin of < 10 mg/dL. Hematology was consulted, and prednisone 1 mg/kg/day was started for a suspected warm autoimmune hemolytic anemia. Hemolysis had significantly lessened one week into prednisone. She was lost to hematology follow-up.

During another admission in January 2021 (for retropharyngeal abscess), a type and screen was performed, which showed another positive antibody detection screen and tube testing consistent with a cold autoantibody. She presented again in September 2021 after a fall at a nail salon. Her hemoglobin was 5 g/dL. She was transfused and discharged. Hemolysis labs were not checked, but a urinalysis showed a small amount of blood in the urine.

She presented again five days later after another fall at a nail salon. She experienced a syncopal episode in the emergency department and significant pain and nausea and vomiting afterward. Her hemoglobin had dropped mildly since her recent discharge. Urinalysis was notable for a large amount of blood. Hemolysis labs were notable for LDH of 352 U/L, haptoglobin of < 10 mg/dL, indirect bilirubin of 1.2 mg/dL, and 4.8% reticulocytes (138 x 10⁴ /μL). Antibody detection screen was again positive, with DAT IgG 2+, DAT C3 negative. Tube testing was ‘negative at immediate spin, 37, and AHG with negative autocontrols, but panpositive at 4 C with a positive autocontrol (3+), consistent with the patient’s history a cold autoantibody.’

Hematology was consulted and began prednisone 1 mg/kg/day for suspected paroxysmal cold hemoglobinuria secondary to Donath-Landsteiner antibody stemming from her treated syphilis. Confirmatory testing was sent.

This case illustrates the importance of following the antibody screen and direct antiglobulin test in patients with recurrent anemia, particularly those with underlying conditions associated with autoimmune hemolysis. The character of the autoantibody may become clearer with time.

DISSEMINATED FUNGAL INFECTION AND MARIJUANA USE IN A PEDIATRIC CANCER PATIENT

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10.1136/jim-2022-SRMC.198

Case Report Several case studies have reported invasive fungal diseases in people who use marijuana and fungal contamination of cannabis. We report a case of an immunocompromised pediatric patient that was a known marijuana user, who
developed disseminated fungal infection during the course of his treatment, and succumbed to death.

Patient was a 16 year old male with T cell lymphoma, while on chemotherapy phase with escalating doses of methotrexate, who developed febrile neutropenia. He presented in septic shock and was diagnosed with a pan-resistant fungal infection (Scedosporium prolificans) with multiple sites of fungal dissemination in lungs, sinuses, skin, brain and spleen. He was treated with Voriconazole, Amphotericin, Micafungin and a new drug in development – Fosmanogepix for 4 months. With worsening disseminated fungal disease, patient was discharged to hospice, and died at home. Of note, patient was a known user of marijuana (vaping) prior to diagnosis and continued to use marijuana during treatment. He also had a medical marijuana card.

Although the frequency and duration of his marijuana use is unclear, it raises suspicion if this exposure could have resulted in colonization of his lungs with fungal organisms. Immunocompromised status with fungal colonization, likely lead to disseminated fungal infection. Studies have also shown that marijuana may have a similar effect as tobacco, and cause structural and immunological lung damage confers increased susceptibility to infection. A recent study with a commercial database showed that people who use cannabis were more likely to have fungal infections, than people who did not use cannabis.

While medical marijuana is approved in several states in the United States, especially for patients receiving chemotherapy, it is important to discuss potential health implications and risk of fungal infections with patients.

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**Abstracts**

**CRANIAL AND SINUS PLASMACYTOMA- A RARE ENTITY**

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10.1136/jim-2022-SRMC.199

**Case Report**

Plasmacytomas are malignant proliferation of plasma cells which can be seen with different plasma cell dyscrasias. We present a rare entity of plasmacytoma presenting as cranial and sinonasal tumor. A 60 year old gentleman with diagnosis of IgG kappa multiple myeloma three years ago. Initial bone marrow evaluation showed 70% plasma cells with no high risk cytogenetic features. He received standard of care treatment with Bortezomib, Lenalidomide and dexamethasone for a total of 12 cycles. He refused to undergo hematopoietic stem cell transplant, subsequently relapsed in one and half year. Treatment was changed to Daratumumab, Pomalidomide and dexamethasone. Patient relapsed after 18 months of treatment, at which point he was initiated on thrice weekly therapy with Ixazomib, Lenalidomide and Dexamethasone. After 4 cycles into treatment he developed symptoms of headaches and diplopia. Clinical exam was consistent with left eye constricted pupil and left lateral rectal palsy. Magnetic resonance imaging of the brain revealed an infiltrative lesion at the skill base involving the bilateral caudaverous sinuses and left sphenoid sinus opacification. Paraproteinemia work up showed increase in serum Immunoglobulin G from 1284 mg/dL to 6337 mg/dL, kappa free light chain from 91.47 mg/dL to 1815 mg/dL, with a kappa/lambda ratio of 637.11 increased from 19.54. Bone marrow biopsy confirmed relapsed multiple myeloma with 90% involvement by plasma cells. The skull base lesion was highly suggestive of plasmacytoma, given the systemic evidence of myeloma relapse. Biopsy of the left sphenoid sinus mass confirmed involvement by plasmacytoma with IgG kappa monotype and immunohistochemistry positive for CD138, CD56 and kappa and negative for MUM1, CD20 and CK AE1,3. He received palliative radiation treatments to the skull base to achieve rapid tumor response. Patient also suffered recurrent epistaxis, requiring embolization of the nasal artery. Sinus endoscopic surgery with maxillary antrostomy was attempted as well. Unfortunately even with aggressive radiation and surgical efforts, patient continued to have significant epistaxis and decided to transition to comfort care.

Extra medullary plasmacytoma of head and neck is rare, comprising 3% of all plasma cell tumors. They constitute 1% of head and neck cancers 4% of all non-epithelial tumors of nasal tract. Direct compression or involvement of cranial nerves causes cranial nerve palsies, symptoms of raised intracranial pressure and epistaxis. Differential diagnosis of the base of the skull tumor includes nasopharyngeal carcinoma, meningioma, lymphoma, pituitary adenoma and metastatic carcinoma. Biopsy showing plasma cells with monocolon staining pattern involving the heavy chain and light chain on immunohistochemical studies help differentiate plasmacytoma from the other tumors. Radiotherapy constitutes the mainstay of treatment, surgery is limited to biopsy and control of local symptoms.

**FALSE POSITIVE HEPARIN INDUCED THROMBOCYTOPENIA IN PATIENT WITH ANTI-PHOSPHOLIPID ANTIBODY SYNDROME**

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10.1136/jim-2022-SRMC.200

**Case Report**

Heparin-induced thrombocytopenia (HIT) is a catastrophic complication of heparin therapy, caused by antibodies against platelet factor 4 (PF4)-heparin complex. Patients with antiphospholipid syndrome (APS) have been rarely reported with positive PF4-heparin complex antibodies.

A 20-year-old female with no medical comorbidities, presented with fever, dyspnea and confusion. She developed respiratory failure requiring mechanical ventilation. Labs were significant for platelet count of 47k/μL, hemoglobin of 6.3 g/dL, white blood cell count of 9k/μL, and serum creatinine of 1.47 mg/dL. Coagulation panel showed a prothrombin time of 16.1, International Normalized Ratio of 1.5, and partial thromboplastin time of 53. Chest imaging showed bilateral infiltrates. Bilateral cerebral infarcts and bilateral renal infarcts were also found, suggestive of thromboembolic arterial events. Echocardiogram showed severe mitral regurgitation with thickening and calcification of the mitral leaflets. Given the neurological symptoms, acute kidney injury and thrombocytopenia, thrombotic thrombocytopenic purpura (TTP) was high on the differential. Peripheral smear showed no evidence of schistocytes, ADAMTS13 level was normal. Hemolysis and nutritional deficiencies were not evident. Patient had no known prior heparin exposure, but HIT antibody was tested positive. Prophylactic heparin was discontinued. Argatroban infusion was initiated, but serotonin release assay resulted negative. Suspicion for autoimmune disease was high given the patient’s age and acute presentation with multiorgan involvement. Her
ANA and anti-double stranded DNA titers were elevated at 1:640 and 1:2560, respectively. Complement levels C3 and C4 were low. Lupus anticoagulant was detected, and anticardiolipin antibodies IgG, IgM were positive. Patient met the criteria for catastrophic antiphospholipid antibody syndrome (CAPS). High dose steroids, cyclophosphamide and plasma exchange were started. She underwent mitral valve replacement for mitral regurgitation and had improvement in her overall clinical status with appropriate management of APS.

Both HIT and APS are immune-mediated thrombotic conditions. Reports have noted patients with APS/systemic lupus erythematosus (SLE) can have positive PF4 antibodies, even without prior heparin exposure. It is believed vascular inflammation from such autoimmune conditions may trigger an autoantibody response to PF4 released from platelets, forming an antigenic complex with endogenous heparinoids, then causing false positive HIT immunoassays. This can be distinguished by testing the functional assays. Manifestations of HIT and APS may both overlap with thrombocytopenia and arterial or venous thrombosis. Therefore, cognizance of possible false positive HIT antibodies in patients with underlying APS/SLE is important. Caution should be executed in interpreting the tests as it can lead to misdiagnosis, overtreatment or undertreatment and risk of catastrophic outcomes.

#203 DIARRHEA SECONDARY TO ILEAL NEUROENDOCRINE TUMOR WITH NO LIVER METASTASIS
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Introduction Well-differentiated neuroendocrine tumors (NETs) are relatively rare tumors that most commonly originate in the gastrointestinal tract, lung, and rarely in the genitourinary tract. We present a similar case with ileal NET, presenting with chronic diarrhea as the sole symptom without liver metastasis.

Case A 65-year-old Caucasian male with a past medical history of hypertension and alcohol abuse presented with 2 months of watery diarrhea. Initially, it was accompanied by fever, chills, and nausea. He also reported generalized weakness and recurrent falls due to syncope. He self-medicated with Ivermectin. He reported a 20 pounds weight loss over 2 months as well as worsening oliguria. However, three days prior to admission he noticed fresh blood in his stool, prompting him to seek medical attention. On admission, he denied abdominal pain, flushing, dyspnea, or chest pain. On examination, he had mild diffuse abdominal tenderness. He had never had a colonoscopy or endoscopy at this point. On admission, his labs were significant for S.Creatinine of 18 mg/dL, a BUN of 161 mg/dL, and HCO3 of 6 mmol/L. His kidney function improved with fluid resuscitation. Stool culture and Clostridiodies difficile toxins were negative.

His CT abdomen with contrast was remarkable for ‘mysty mesentry’ suggestive of panniculitis. Colonoscopy showed a large 3 cm submucosal polypoid nodular mass at a 10 cm distance from the ileocecal junction. Biopsy reported a well-differentiated neuroendocrine tumor (carcinoid), spanning at least 2 mm involving the lamina propria and submucosa. Vater ultrasound showed only hepatic steatosis with no lesions. 24-hour urine HIAA was 12.5 mg, chromogranin-A 1048 ng/mL, and serum serotonin level of 883 ng/mL. TTE showed no valvular abnormalities. A small bowel mass was resected along with a right hemicolectomy his diarrhea improved.

Discussion Small bowel neuroendocrine tumors are found incidentally as they are mostly asymptomatic. These tumors are usually underdiagnosed especially in patients who do not receive screening colonoscopy, like in our patient. Often these tumors metastasize to the lymph nodes and liver and are diagnosed at a late stage. 24-Hour urine excretion of 5-HIAA has high sensitivity and specificity for carcinoid syndrome. However, in our patient, these levels were normal but elevated serotonin and chromogranin markers indicated further investigation. Symptoms are mostly associated with metastasis but our patient had characteristic chronic diarrhea with no metastasis. The recommended treatment for tumors that have not metastasized is a resection of the bowel mesentery, which resolved our patient’s illness.

Conclusion This case focuses on chronic diarrhea being the sole presenting symptom in ileal carcinoid tumors without objective evidence of metastasis.

#204 METASTATIC HIGH GRADE POORLY DIFFERENTIATED LARGE CELL NEUROENDOCRINE CARCINOMA OF THE RECTUM, A RARE ENTITY
H Khazrik1, C Kamireddy, R Brudnik, K Chakraborthy, S Singal. East Tennessee State University, Johnson City, TN

Case Report Rectal neuroendocrine neoplasm (R-NEN) is a rare entity which accounts for less than 1 per 100,000 population in United States of America. Gastroenteropancreatic (GEP) neuroendocrine tumor (NETs) are classified based on grade and differentiation. Well-Differentiated Neuroendocrine Tumors include grade 1 and grade 2, and Poorly Differentiated Carcinomas (PD-NEC) enclose only grade 3 neoplasms with small cell and large cell subtypes. A subtype of the high-grade NET with well differentiated histology was recognized in 2019 WHO classification of NEN of digestive system. High-grade (G3) NET characterized by a high mitotic rate and/or high Ki-67 index (more than 20).

We present a case of metastatic poorly differentiated high grade rectal large cell NEC. 39 years old gentleman presented to hospital with abdominal pain, rectal bleeding, and weight loss. Imaging demonstrated a 6 cm mass in the rectosigmoid junction with subtotal obstruction and 2.3 cm para-aortic adenopathy. Colonoscopy noted subtotal obstruction with large rectal mass 8 cm from the anal verge. CEA was within normal range. Biopsy of both rectal mass and para-aortic lymph node was consistent with large-cell neuroendocrine carcinoma positive for CD56, synaptophysin, CDX2 with a Ki-67 > 95%. Numerous mitoses noted in lymph node. He underwent palliative loop sigmoid colostomy followed by palliative cytotoxic chemotherapy with Carboplatin and Etoposide. Atezolizumab immunotherapy was added with cycle four. Positron emission tomography scan after 4 cycles of chemotherapy revealed stable disease. Both the small or large cell poorly differentiated subtypes of high-grade neuroendocrine carcinomas (NEC) are aggressive tumor with high propensity for distant metastasis and an ominous prognosis. There is a general lack of data from prospective trials to guide treatment. These tumors show similarities in morphology and biologic behavior to small cell...
carcinoma of lung (SCLC); thus, treatment paradigms have paralleled those established for SCLC. Platinum-based cytotoxic treatment with etoposide or irinotecan represents the backbone of treatment for advanced/metastatic/untreatable disease. Further option of chemotherapy after platinum failure, include, fluoropyrimidine, irinotecan, temozolomide and oxaliplatin-based regimens. The efficacy of second line or later lines of chemotherapy is limited, with short median survival estimated between 5–10 months.

**#205 PRIMARY CUTANEOUS DIFFUSE LARGE B-CELL LYMPHOMA LEG TYPE**

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Case Report Primary cutaneous B-cell lymphoma (PCBCL) is a non-Hodgkin lymphoma, involving the skin in the absence of extracutaneous disease at diagnosis. The three main subtypes include primary cutaneous follicular lymphoma (PCFL), primary cutaneous marginal zone lymphoma (PCMZL) and primary cutaneous diffuse large B-cell lymphoma leg-type (PCDLBCL leg-type). While the first two subtypes are more common and an indolent disease, the PCDLBCL leg-type is an aggressive disease with poor prognosis. PCDLBCL leg-type is typically seen in elderly female patients, affecting the lower legs but 10–15% of cases arise at other sites. Pathologic diagnosis is based on morphology and immunohistochemical features of skin biopsy regardless of anatomic location.

A 62-year-old female on chronic steroids for autoimmune vasculitis, developed sacral plaques and ulcers associated with bilateral cutaneous leg nodules, vision changes and weight loss. Punch biopsy of the sacral wound revealed large-sized lymphoid cells positive for CD20, BCL2, BCL6, MUM-1 and Pax-5 with high Ki-67 (90–95%) and negative for CD10 consistent with PCDLBCL leg-type. Double/triple hit lymphoma was ruled out. PET-CT scan demonstrated a 15.2 x 10.6 cm centrally necrotic sacral, soft tissue mass, FDG avid, with no distant disease, lymphadenopathy or splenomegaly. Biopsy of lower extremity nodules, virteous bone and bone marrow were negative for lymphomatous involvement. MRI brain revealed a 6 mm mass in the left frontal region. CSF cytology was negative. Brain biopsy showed reactive gliosis and rare isolated large B-cells positive for BCL2, BCL6 and Ki67 consistent with minimal involvement with lymphoma. Patient initiated dose-adjusted R-EPOCH (rituximab, Etoposide, prednisone, vincristine, cyclophosphamide, doxorubicin) to be followed by short course cranial radiation treatment (XRT) between cycle 1 and 2. She had remarkable response in the sacral tumor size after cycle 1 but rapid CNS progression complicated with hospitalization, neutropenic fever, internal jugular vein thrombosis and large retroperitoneal hematoma while on anticoagulation. She received two sessions of XRT to the brain before she decided to adopt hospice due to deterioration of performance status.

PCDLBCL leg-type has a gene expression profile similar to activated B-cell subtype of diffuse large B-cell lymphoma (DLBCL). The frequency of MYC rearrangement and MYD 88 mutation is higher in PCDLBCL – leg type. The treatment approach is with rituximab plus anthracycline-based combination chemotherapy followed by involved-field XRT if needed. PCFL and PCMZL can be treated with single modality XRT or single agent Rituximab. Unlike PCFL and PCMZL, PCDLBCL leg-type has a high frequency of eventual extracranial relapse leading to a lower rate 5-year disease specific survival of PCDLBCL leg-type with 50% vs 95%/98% in PCFL, PCMZL, respectively. We present here a case of PCDLBCL Leg-type in an unusual anatomical location with rapid CNS progression.

**#206 POST TRANSPLANT LYMPHOPROLIFERATIVE DISORDER COMPLETE RESPONSE WITH SINGLE AGENT RITUXIMAB TREATMENT**

D Kim*, O Mohammadi, J Kim, P Vahhabaghia, S Singal, D Jaishankar. East Tennessee State University James H Quillen College of Medicine, Johnson City, TN

Case Report Post-transplant lymphoproliferative disorders (PTLD) is a fatal lymphoproliferative disorder associated with immunosuppression that arises in 5–10% of patients after solid organ or hematopoietic stem cell transplant. We present a case of PTLD that achieved complete response with single agent rituximab.

A 60-year-old male with juvenile type I IDDM, renal failure, severe diabetic retinopathy (legal blindness), prior renal and pancreatic transplant on maintenance immunosuppressive therapy with tacrolimus and mycophenolate presented to the hospital with acute onset abdominal pain. Imaging demonstrated high-grade small bowel obstruction, and he underwent exploratory laparotomy with enterectomy and R2 resection (gross residual disease). Labs revealed mild LDH elevation with negative EBV and CMV PCR status. Surgical pathology showed tumor cells positive for CD45, CD20, PAX5, CD10, BCL6 and negative for CD3, CD117, CK, cam 5.2, synaptophysin, CD56, CD5, CD23, MUM1, BCL2, cyclin D1, SOX11, CD34 and Tdt. Ki-67 staining was 80%. MYC rearrangement was negative. TP53 mutation was positive. Final pathology reported diagnosis of monomorphic post-transplant lymphoproliferative disorder with diffuse large B-cell lymphoma. Subsequently, his tacrolimus was dose-reduced, and mycophenolate was discontinued. In addition to reduction of immunosuppressives (RI), chemoimmunotherapy was recommended to the patient, but he declined chemotherapy due to his functional status and comorbidities. He was started on rituximab weekly for 4 cycles with PET-CT monitoring for treatment response. At the completion of 4 cycles of weekly rituximab, PET-CT scan was obtained, which did not reveal any significant tumor activity. Consolidation rituximab every 3 weeks for a total of 4 cycles as per guidelines was instituted. Repeat PET scans continued to show complete response without evidence of new lesions or lymphadenopathy. Deauville score was 1 at the 10-month mark since the initiation of rituximab.

PTLD covers a wide spectrum of malignancies ranging from polyclonal early lesions to monomorphic lymphoma, as presented in this case. Available treatments include immunosuppressive reduction, chemoimmunotherapy, antiviral therapy, cytotoxic T-cell therapy, surgery or radiation. Single agent rituximab therapy has shown minimal toxicity with good efficacy with approximately 60% complete or partial response (ORR). CHOP given sequentially or concurrently with the rituximab improves overall response rate (ORR) to 90%.
Despite complete response with single agent rituximab, close surveillance is required in our patient. Inability to discontinue immunosuppressive agents completely, and exclusion of chemotherapy such as CHOP treatment portends higher relapse risk. Our case highlights a patient on immunosuppressive agents for more than 20 years after solid organ transplant developing monomorphic PTLD that was successfully treated with single agent rituximab.

#207 RETROPERITONEAL FIBROSIS IN A CASE OF METASTATIC BREAST CANCER – DRUG OR DISEASE?

Introduction Retroperitoneal fibrosis (RPF) in the setting of metastatic breast cancer is a rare pathological phenomenon. Here is a case of a patient presenting with acute kidney injury (AKI), subsequently finding ureteral obstruction.

Case A 33-year old female reported a palpable right breast lump. Mammography and ultrasound found to have a 5.8 cm mass with biopsy confirming estrogen and progesterone receptor negative, HER2 negative intraductal carcinoma of the breast. Three right axillary lymph nodes were positive for cancer. Positron emission tomography (PET) found left-sided lymphadenopathy with biopsy proving oligometastatic breast cancer. Treatment with curative intent was pursued after multidisciplinary discussion. Neoadjuvant therapy with protein-bound paclitaxel and atezolizumab was started. Stable disease was noted on imaging, and neoadjuvant treatment changed to doxorubicin and cyclophosphamide. Then, she underwent right mastectomy, axillary lymph node dissection, and adjuvant radiotherapy. Unfortunately after completion, metastasis to the bones and contralateral breast was found. Palliative sacituzumab govitecan, a recently approved antibody-drug conjugate agent, was started, completing three cycles. Surveillance labs showed creatinine of 6.4 mg/dL, hyperphosphatemia and AKI recurred, and bilateral nephrostomy tubes were placed. A stents were placed. Retrograde pyelogram noted proximal ureter stenosis. Moderate bilateral hydronephrosis was found, and ureteral stents were placed. Retrograde pyelogram noted proximal ureter kinking for which etiology was unclear. Post obstructive AKI recurred, and bilateral nephrostomy tubes were placed. A month later, repeat retrograde pyelogram showed left ureter narrowing, then mid ureter dilation and narrowing again proximally. Repeat PET showed no evidence of retroperitoneal disease. Exploratory laparoscopy revealed diffuse RPF. Urology recommended higher caliber ureteral stents for subsequent follow-up.

Discussion Structures within the retroperitoneal space include the kidneys, ureters, duodenum, ascending/descending colon, parts of the pancreas, the aorta, inferior vena cava, and iliopsoas muscle. RPF can lead to compression of these structures. Causes of fibrosis can include infection, autoimmune disease, medications, trauma, abdominal surgeries, radiotherapy, and malignancy. Malignancy contributes to 8–11% of cases. Associated cancers may include lymphomas, sarcomas, metastatic breast, gastrointestinal, renal, prostate, and lung as well as carcinoid tumors. PET scan can be used for assessment, although was unrevealing in this case. There is limited data to suggest sacituzumab contributes to RPF, but immunotherapy has been reported in a few cases, also received by this patient.

Conclusion Retroperitoneal fibrosis is a rare entity. Management entails treatment of the underlying disease, and prognosis secondary to malignancy is poor.

#208 MIXED PHENOTYPE ACUTE LEUKEMIA: WHEN TWO LINEAGES MEET
D Kim*, J Kim, A Sinha, D Jaisankar, K Chakraborty. East Tennessee State University James H Quillen College of Medicine, Johnson City, TN 10.1136/jim-2022-SRMC.206

Case Report Mixed phenotype acute leukemia (MPAL) is a rare disease entity that comprises less than 1% of all acute leukemias. It has characteristics of both acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML). MPAL with features of T-ALL are particularly uncommon. We present a case of T/myeloid mixed-phenotype acute leukemia not otherwise specified (MPAL NOS).

A 70-year-old male presented to the hospital with complaints of dizziness and weakness of 2 months duration. He reported significant weight loss and easy bruising on his limbs. He was pancytopenic (WBC 3.3 K/µL, Hgb 5.7 g/dL, plt 5 K/µL) at the time of the presentation. Systemic CT imaging showed diffuse lymphadenopathy. FNA of an inguinal lymph node revealed neoplastic cells with immunohistochemistry expression of CD3, CD5, TdT, suggestive of T-ALL. Subsequent bone marrow biopsy/aspiration showed 50% blasts and 30% monocytes with atypia. Morphology was consistent with AML with monocytic features. Immunophenotyping revealed predominant myeloid differentiation with expression of MPO, CD117, CD33, HLA-DR, CD15, and partial expression of CD34 and CD13. A smaller population, approximately 10–15%, expressed T-cell lineage markers – cytoplasmic CD3, CD5, and CD7, and partially expressed CD34. T-cell gene rearrangements and JAK3 mutations noted in various T-cell neoplasms were reported. BCR-ABL1 translocation (t(9;22)) and KMT2A rearrangement were not detected. Abnormal male karyotype with rearrangements of chromosome 8q and 20p were suggestive of a neoplastic state.

Based on 2016 revised WHO diagnostic criteria, this patient’s leukemia met criteria for T/myeloid MPAL NOS. Outcomes in MPAL is uniformly poor compared to typical AML or ALL. Factors associated with adverse outcome include age, WBC count, Philadelphia chromosome status (Ph), extra- medullary involvement, and immunophenotype (worse outcome in T-myeloid). To date, there is no optimal treatment strategy based on randomized prospective clinical trial data. For Ph(-) MPAL, a general consensus is to treat with an ALL- like regimen followed by allogeneic stem cell transplant. The patient was supported with appropriate blood product transfusion and was evaluated for intensive chemotherapy and possible hematopoietic stem cell transplant. A regimen of cyclophosphamide, vincristine, doxorubicin, and dexamethasone alternating with methotrexate and cytarabine (Hyper-CVAD) was proposed. He opted for best supportive care after several discussions taking his age, co-morbidities and overall prognosis of MPAL into account.

MPAL is a rare and aggressive disease entity. Treatments are generally extrapolated from typical ALL and AML treatment strategies. It is important to determine Ph(+/-) status. Preliminary data has suggested that MPAL with t(9;22) is...
COMPOSITE LYMPHOMA COMPRISING PERIPHERAL T-CELL LYMPHOMA NOT OTHERWISE SPECIFIED AND B-CELL FOLLICULAR LYMPHOMA

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Case Report
Composite lymphoma is defined as coexistence of 2 or more morphologically and phenotypically distinct lymphomas in the same anatomical site. Composite lymphomas may include combinations of Hodgkin lymphoma (HL) and B- or T- cell Non- Hodgkin lymphoma (NHL); B- cell NHL and T- cell NHL; two distinct B- cell or T- cell NHLs. The incidence of composite lymphomas varies from 1% to 5%. The exact pathogenesis of composite lymphoma is unknown. It is challenging to establish the diagnosis and chemotherapeutic protocols for composite lymphomas. The treatment is usually directed towards the higher-grade component. Most of the cases show worse outcome with the median survival of 12 months. Here we report a case of peripheral T cell not otherwise specified (PTCL-NOS) and follicular B cell composite lymphoma (FL).

A 66-year-old female, smoker initially presented with generalized lymphadenopathy, B symptoms, hypercalcemia and exudative right-sided pleural effusion. CBC positive for moderate normocytic normochromic anemia and mild thrombocytopenia. Generalized metabolically active lymphadenopathy on PET scan (figure 1A).

Left axillary lymph node showed effacement of the architecture due to an atypical follicular proliferation composed of follicles varying in size, positive for CD20, CD79, OCT2, BCL2, BCL6 and MUM1.FL Grade-3 (figure 1B) was favored.

Polymorphic population in the background was positive for CD3, CD5, CD2, CD7 (with partial loss), CD30 and CD43 (figure 1C). Epstein Barr virus (EBV) B- cells were expanded. Based on morphology and immunohistochemistry, diagnoses of PTCL-NOS with high proliferative index was favored in the atypical T- cell population.

Recurrent hypercalcemia treated with pamidronate while awaiting diagnosis. Since PTCL-NOS is aggressive of the two lymphomas she is currently receiving brentuximab vedotin, cyclophosphamide, doxorubicin, and prednisone (BV+CHP). Given paucity of evidence to use rituximab and brentuximab vedotin concurrently. We plan to use rituximab after completion of BV+CHP followed by autologous stem cell transplant evaluation.

EMICIZUMAB IN PATIENTS WITH ACQUIRED HEMOPHILIA A (AHA)

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Case Report
Acquired hemophilia A(AHA) is a bleeding disorder resulting from the development of neutralizing autoantibodies (inhibitors) against FVIII in individuals with previously normal hemostasis. Subsequent to the decrease in FVIII activity, life threatening bleeds may occur. The median age at diagnosis is 64–78 years old. 89% of the patients are diagnosed after bleeding events.

Management of AHA includes eradication of the inhibitor with immunosuppressive treatment(IST) and control/prevention of bleeding.

Acute bleeding is currently managed using FVIII bypassing agents: recombinant FVIIa(rFVIIa), activated prothrombin complex concentrate, recombinant porcine FVIII(rpFVIII). Their use is associated with high risk of thrombosis in patients with underlying comorbidities and they are not good as prophylactic agents to prevent bleeds.

Emicizumab, approved for use in congenital hemophilia A as a FVIII mimic that bridges activated factor IX and factor X, can be proposed for prophylaxis in AHA. We hypothesize that Emicizumab use in AHA can reduce the number of bleeds after first diagnosis of AHA and the need for bypassing agents. It promotes outpatient treatment and improves overall outcome in AHA.

We are reporting 2 cases of AHA successfully treated with Emicizumab.

Case#1 is a 78 y/o lady with Rheumatoid Arthritis presenting with subcutaneous hematoma on left arm and hematuria. On admission hemoglobin(Hgb) was 4.4, FVIII 5%, FVIII Inhibitor 106BU. She was started on prednisone, rpFVIII, Rituximab and red blood cells(RBC)transfusions to keep Hgb >7(3 units used). Her FVIII inhibitor was 40 after a month( mo) on treatment and FVIII recovery was low despite increased doses of rpFVIII, suggesting a cross-reacting anti-porcine activity of her inhibitor. Emicizumab was started(6 mg/kg/week for 2 doses, 3 mg/kg/week for 2 doses then 1.5 mg/kg weekly until normal FVIII level and FVIII inhibitor is not detected). Bleeding stopped after starting Emicizumab, FVIII and FVIII inhibitor levels were 78%, <0.6 after 4 mo respectively.

Case#2 is a 73 y/o man with metastatic prostate cancer admitted with leg hematoma and melena. On admission Hgb was 8.5, FVIII <1% FVIII inhibitor >500BU. He was started on prednisone, rFVIIa then rpFVIII, Rituximab, and RBC transfusions to keep Hgb >8(13 units over 2 weeks).1
week after discharge, he came back with muscle bleed Hgb 7.4, FVIII 31, FVIII inhibitor 362. FVIII recovery was inappropriate with rpFVIII. Emicizumab was started. 6 weeks later, FVIII levels recovered and the inhibitor was not detected.

In conclusion, the use of Emicizumab in AHA patients achieved marked improvement in preventing bleeding and ameliorated the overall outcome. No thrombosis were reported in both cases, nor re hospitalisation for bleeding events after starting Emicizumab. Larger studies are needed to support the benefit of initiation of such therapy at earlier stages in patients presenting with AHA.
although, it seems to be less effective in the setting of HL. In some cases, treating the primary disease with chemotherapy leads to resolution of AIHA.

This case highlights the importance of further work up in pediatric patients with autoimmune hemolytic anemia (AIHA) with warm antibodies, considering than in about half of the patients AIHA is secondary to another pathology.

It also displays the significance of developing a thorough differential diagnosis even on frequent pathologies like anemia avoiding early closure.

**Abstracts**

**#213 HEALING POWER OF MIND BODY HYPNOSIS**

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10.1136/jim-2022-SRMC.211

**Purpose of Study** Clinical hypnosis has been defined as a mind-body therapy that involves a deeply relaxed state, individualized mental imagery, and therapeutic suggestion. Head and neck cancer patients suffer from significant pain and distress ranging from xerostomia, anxiety, depression, surgery disfigurement, and post-radiation fibrosis resulting in several burdensome sequelae including dysphagia and decreased quality of life. Hypnosis is one of the most frequently cited forms of nonpharmacologic cognitive pain control therapy now growing in use in cancer care. Our objective is to demonstrate how clinical mind-body hypnosis can improve dysphagia in head and neck cancer survivors.

**Methods Used** This will be a randomly double-blind controlled study. The aim is to understand the effect of once-daily hypnosis therapy on dysphagia severity over an eight-week treatment period. Furthermore, this study seeks to understand the necessary dosage of hypnosis therapy to influence various prevalent symptoms including mood, pain, self-image, and dysphagia in head and neck cancer survivors. One group of patients will be given the hypnosis audio to listen to daily for eight weeks while the other group will rank their top four symptoms from most to least bothersome and listen to two weeks of hypnosis audios for each symptom, totaling eight weeks. In both patient groups, pre-surveys will be given before hypnosis therapy and once weekly surveys will be administered throughout the hypnosis therapy. Final post surveys will be given at week 12 at the end of the study. As an objective measure, all participants will have a FEES (fiberoptic evolution of swallowing) study before and after the intervention. The subjective surveys administered throughout the study include Pre and Post MDADI questionnaire and PROMIS questionnaires on mood, sleep, pain, and quality of life.

**Summary of Results** This study is currently in process.

**Conclusions** This study is currently in process.

**#214 A PROMISING ALTERNATIVE: NEOADJUVANT ENDOCRINE THERAPY IN ESTROGEN AND PROGESTERONE RECEPTOR-POSITIVE BREAST CANCER**

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10.1136/jim-2022-SRMC.212

**Case Report** Neoadjuvant therapy (NT) is a treatment administered to breast cancer (BC) patients prior to surgery with either locally advanced breast cancer (LABC) or to facilitate breast-conserving surgery. In the US, neoadjuvant chemotherapy (NCT) is the most commonly used type of NT. However, an alternative is neoadjuvant endocrine therapy (NET). It has a lower toxicity profile and is suggested to be as effective as NCT. We will present 5 cases to discuss this underutilized approach.

The median age was 61 years old (range 46–77), and four patients were postmenopausal. Three patients had invasive ductal carcinoma, and two had lobular carcinoma. All patients had tumors that were strongly estrogen receptor-positive (ER+) and HER2 negative. Four had low Ki67. The 21 gene recurrence score (RS) was measured in three, and all were low. The median duration of therapy was four months (range 2–10). Three patients experienced a partial tumor response, two patients had no response. Four patients are alive, and one patient who didn’t respond developed metastatic disease and expired four years after diagnosis.

**Abstract #214 Table 1 Patient treatment summary**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Histology &amp; Tumor Profile</th>
<th>NET</th>
<th>Tx Duration (months)</th>
<th>Tumor Response</th>
<th>Surgical Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Grade 1 Ductal Carcinoma</td>
<td>Anastrozole</td>
<td>10</td>
<td>75% reduction</td>
<td>Partial mastectomy: residual cancer</td>
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<tr>
<td>72 y Stage III</td>
<td>ER 95%, PR 90%, Ki67 16%-3%</td>
<td></td>
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</tr>
<tr>
<td>B</td>
<td>Grade 1 Ductal Carcinoma</td>
<td>Anastrozole</td>
<td>4</td>
<td>75% reduction</td>
<td>Mastectomy: residual cancer 2.0 cm, neg. nodes Stage II</td>
</tr>
<tr>
<td>61 y Stage II</td>
<td>ER 95%, PR 0%, Ki67 5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Grade 1 Lobular Carcinoma</td>
<td>Anastrozole</td>
<td>4</td>
<td>7% reduction</td>
<td>Mastectomy: residual cancer 24 cm, 24 positive nodes Stage III</td>
</tr>
<tr>
<td>61 y Stage III</td>
<td>ER 95%, PR 0%, Ki67 5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Grade 2 Ductal Carcinoma</td>
<td>Leuprolide and Tamoxifen</td>
<td>2</td>
<td>4% growth</td>
<td>Mastectomy: residual cancer 2 cm, 4 positive nodes Stage II</td>
</tr>
<tr>
<td>46 y Stage III</td>
<td>ER 95%, PR 95%,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
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<td>Anastrozole</td>
<td>4</td>
<td>32% reduction</td>
<td>Pending partial mastectomy</td>
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<td>77 y Stage II</td>
<td>ER 95%, PR 10%, Ki67 8%</td>
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</table>
HEMOLYTIC ANEMIA SECONDARY TO METHEMOGLOBINEMIA AFTER BUPIVACAINE USE

O Mohammad*, H Khaziz, M Raasly, S Singal, K Chakraborty. East Tennessee State University, Johnson City, TN

10.1136/jim-2022-SRMC.215

Case Report In methemoglobinemia, ferrous ions in hemoglobin convert to ferric ions and are unable to carry the oxygen to the tissues. Common causative agents are topical anesthetics like bupivacaine or lidocaine, antibiotics, rasburicase, nitrates, and chemical substances. Hypoxia and hemolysis are two adverse outcomes of methemoglobinemia. We present a scenario of methemoglobinemia-induced hemolysis.

This patient is a forty-two-year-old male with a past medical history of type 1 diabetes and end-stage renal disease who got admitted due to osteomyelitis and underwent bone excision and debridement. Shortly after surgery, the patient started having shortness of breath and fatigue. Oxygen saturation dropped to 74% and hemoglobin trended down to 5.2 g/dL. Baseline hemoglobin was around 11 g/dL. The patient had been exposed to bupivacaine during surgery. Laboratory findings showed lactate dehydrogenase (LDH) of 650 U/L and total bilirubin of 2.9 mg/dL. Coombs’ test showed positive IgG and C3. Methemoglobin level peaked at 2.4%.

Glucose-6-phosphate dehydrogenase (G6PD) deficiency, myeloma panel, hepatitis, human immunodeficiency virus, paroxysmal nocturnal hemoglobinuria flow cytometry, hemoglobin electrophoresis, and cold agglutinin were unremarkable. Peripheral blood smear showed normocytic anemia with mild red cell clumping and spherocytosis.

The patient denied any active bleeding and underwent endoscopy which showed a clean-based duodenal ulcer.

Laboratory findings were consistent with hemolysis. He responded poorly to blood transfusion, intravenous immunoglobulin showed short-term improvement and then started on prednisone 1 mg/kg which stabilized his hemoglobin, methemoglobin, LDH, and bilirubin.

Bupivacaine is a known cause of methemoglobinemia. Typical presentations of methemoglobinemia are cyanosis with low oxygen saturation, but normal arterial oxygen saturation and usually seen when methemoglobin level is more than 15%. Prompt diagnosis of methemoglobinemia is important to avoid life-threatening complications. Our patient presented with shortness of breath, hypoxia and anemia shortly after exposure to bupivacaine.

Methemoglobinemia-induced hemolysis is more common in patients with G6PD deficiency which was negative in the above patient. It should be noted that hemolysis can be seen even without G6PD deficiency.

Treatment cornerstone is to stop the offending agent. Methylene blue is indicated in methemoglobinemia when the patient is symptomatic and the methemoglobin level is more than 20%. Also, methylene blue can cause further hemolysis if a patient has G6PD deficiency and should be avoided in this population. Methylene blue was not indicated in our case due to lower levels of methylene blue.
mutations were tested including PRF1, UNC13D, STXBP2, although none was mutated. No infectious, rheumatologic or oncologic triggers were detected. Early diagnosis and treatment are critical. Without treatment, survival is measured in months due to multiorgan failure. This syndrome rarely presents in the absence of triggers which may cause delay in diagnosis and successful treatment. 5-year overall survival with HLH 94 protocol is 54% as opposed to 0% prior to the advent of this protocol. Etoposide and steroids are the mainstay of HLH-94. Cyclosporine can be added in the maintenance phase and hematopoietic stem cell transplant is reserved for familial or relapsed HLH.

**#217 TREATMENT OF BURKITT LEUKEMIA IN ADOLESCENTS: AN UNMET NEED**

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10.1136/jim-2022-SRMC.215

**Introduction** Non-Hodgkin’s lymphoma accounts for approximately 7% of cancers in patients under 20 years.

**Case presentation** A 21-year-old male presented with diffuse abdominal pain and weight loss. Abdominal exam showed a soft, nontender abdomen with absent bowel sounds and a hard mass inferior to the umbilicus. CT scan showed a 12 cm x 7 cm lobulated soft tissue mass in the upper abdomen posterior the stomach and surrounding the mesenteric vessels. A biopsy of the abdominal mass showed markers consistent with Burkitt lymphoma. MYC gene rearrangement was detected. LDH was 1501 u/l. MRI-Brain showed extraxial material over cerebral convexities. Due to patient being an adolescent and evidence of better outcomes with pediatric regimens, he was started on COG ANHL1131 regimen. Pre-phase with cyclophosphamide, vincristine and prednisone was begun. Patient developed tumor lysis syndrome (TLS) with phosphorus 15.5 mg/dL despite being on prophylaxis. Patient required continuous renal replacement therapy. Ommaya reservoir was placed for intrathecal chemotherapy days 2,4 and 6. He tolerated this well with tumor lysis syndrome resolving. Repeat CT of the abdomen on hospital day 25 showed resolution of the mass found at presentation. On hospital day 31 the induction phase was begun with COPADM2- rituximab, vincristine, prednisone, high dose methotrexate, folinic acid, cyclophosphamide, and doxorubicin. On hospital day 50 round 2 of induction phase was started. The patient tolerated this course well and was discharged on hospital day 57. Repeat CT Abdomen showed disappearance of the mass.

**Discussion** Non-Hodgkin lymphomas (NHLs) occurring in children and adolescents and young adults (AYA) are characterized by various age-related differences in tumor biology and survival. For the most part, there is remarkable divide in how pediatric patients (under the age of 18 years) with lymphoma are treated vs their young adult counterparts, and molecular data are lacking, especially in pediatric and AYA series. Due to the paucity of clinical trials in this age group, the impact of these different strategies on outcomes is not well known and needs to be studied.

**#218 VANCOMYCIN INDUCED THROMBOCYTOPENIA-A POSSIBLE DRUG REACTION**

K Parmar*, A Gutai, D Pawar, G Del Rio-Pertuz, K Nugent. Texas Tech University Health Sciences Center, Lubbock, TX

10.1136/jim-2022-SRMC.216

**Introduction** Vancomycin is considered relatively safe, but hematologic side effects have been reported infrequently.

**Case Report** A 77-year-old man presented with generalized weakness. His medical conditions included peripheral arterial disease, diabetes mellitus, hypertension, and hyperlipidemia. Five weeks before, patient underwent transmetatarsal amputation of left foot due to osteomyelitis and was discharged on vancomycin and ceftriaxone for six weeks. His other medications were lisinopril, januvia, aspirin, atorvastatin, clopidogrel, ceftriaxone and Tylenol. Physical examination was unremarkable. His labs were significant for a platelet count of 3K/µL and hypokalemia. The platelets were elevated on previous admission. Coagulation panel showed an elevated prothrombin time and international normalized ratio(INR). He received enoxaparin last admission. HIT antibody was negative. Peripheral blood smear showed no schistocytes. Vancomycin was held. He received 2 bags of platelets and two doses of intravenous immunoglobulin. His anti-platelet antibody and vancomycin dependent antibodies were negative. Three days later, his platelets went up to 130X10^3/µL, and the patient was discharged.

**Discussion** Drug induced thrombocytopenia (DIT) is usually associated with bleeding however, our patient was asymptomatic. The thrombocytopenia was seen 33 days after drug initiation. Usually, DIT is known to persist 5–10 days after exposure. Antibody testing was negative which could be due to prior immunoglobulin administration or a nonimmune mechanism which is rarely reported.

**#219 A VERY UNLIKELY TRANSFORMATION**

R Patel*, GD Gibson, C Milner. The University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.217

**Introduction** Chronic Lymphocytic Leukemia (CLL) and Mantle Cell Lymphoma (MCL) are two lymphoid neoplasms characterized by the proliferation and accumulation of mature
A CASE OF HLH IN A PATIENT WITH RCC AND MDS

D Pawar*, K Parmar, A Deb, S Duanggham, Z Elharabi, S Rehman. Texas Tech University Health Sciences Center, Lubbock, TX

Introduction: Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening syndrome of abnormal immune activation causing cytokine storm leading to systemic inflammation and multiple organ failure. It is rare in the adult population and initial presentation can be sub-acute that can progress rapidly. Early treatment improves survival, but diagnosis is challenging and requires a high index of suspicion.

Case report: A 69-year-old male presented with 2 days of hematuria, nausea/vomiting, poor oral intake and a syncope episode due to dehydration that was resolved with intravenous fluids. He had a one-month history of generalized malaise, fatigue, subjective fever, night sweats, and 7lb weight loss. His past medical conditions were significant for psoriatic arthritis, hypothyroidism, and diffuse large B-cell lymphoma that was treated 7y ago. His family history was significant for father with psoriasis, mother with breast cancer, and lupus and breast cancer in his sister.

Initial labs showed pancytopenia with WBC 2000, platelets 45000, hemoglobin 10.3, mild transaminates, elevated total bilirubin of 1.8, and acute kidney injury with Cr 1.8. CT abdomen revealed cholelithiasis, 19 cm splenomegaly, and a 4x3 cm right renal mass which was biopsied and found to be grade 1 clear cell renal cell carcinoma (RCC). Two days after presentation, his pancytopenia had worsened with WBC of 830 (ANC 547), platelets 39, hemoglobin 9, and patient developed neutropenic fever of 102.9F. Workup was negative for infectious etiology. Peripheral blood smear was unremarkable. Bone marrow biopsy showed hypercellular marrow with 0% blasts, consistent with low-risk myelodysplastic syndrome (MDS). His transaminates, bilirubinemia, renal function continued to worsen with AST in 800s, ALT in 250s, mixed bilirubinemia of 8.4, BUN 110, Cr 4.8, anion gap acidosis of 20, respectively. Five days after presentation, DIC panel was significant for coagulopathy with severe hypofibrinogenemia of 80 and D-Dimer 15688. Ferritin level had increased to 14102 from 5344 at presentation. Fasting triglycerides were elevated at 284. Clinical picture was suspicious for HLH and further HLH workup revealed his HScore to be 269, indicating 99% probability of HLH. He was started on HLH-94 protocol based treatment with improvement of lab parameters, but patient elected to pursue comfort care after 2 cycles of treatment due to severe treatment related toxicity.

Discussion: HLH has been associated with predisposing genetic defects, infections, malignancies, and rheumatologic conditions. Our patient did not show signs of recurrence of lymphoma, however both MDS and RCC have been associated with HLH and our patient had history of rheumatologic disorders. Diagnosis involves fulfilling 5 out of 8 diagnostic criteria; our patient matched 6. H-Score > 250 indicates 99% probability of HLH. Untreated patients have survival of only months and treatment based on HLH-94 protocol can improve survival.

#221 A CASE OF DVT AND PE AND CARDIAC ARREST IN A PATIENT WITH FACTOR V LEIDEN MUTATION AND COVID

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Introduction: Heterozygous Factor V Leiden (FVL) mutation is the most common inherited thrombophilia, most common in people of Northern European descent and in some Middle Eastern population. It increases risk of developing a deep venous thrombosis (DVT) by 5- to 7-fold, and is considered a weak risk factor, and most people never develop blood clots.
Case report 19-year-old woman presented with left lower quadrant abdominal pain, left groin pain, chest tightness and shortness of breath that had started 1 week prior to presentation. Patient had tested positive for COVID-19 six months but had only minor symptoms and recovered without needing treatment. She had completed 2nd dose of Moderna Covid vaccine two weeks ago and had been using oral contraceptive pills (OCP) for two years. Family history was significant for a paternal uncle with history of blood clots. Physical exam revealed swelling and erythema in left lower extremity up to groin area. Doppler ultrasound showed an acute DVT in the left external iliac vein, common femoral vein, deep femoral vein, superficial femoral vein, and proximal popliteal vein. Spiral computed tomography imaging of chest showed pulmonary emboli (PE) in the segmental branches of the pulmonary arteries with mild dilation of the right ventricle. Cardiac echogram (TEE) showed intact right ventricular function. Patient underwent mechanical aspiration thrombectomy with extraction of DVT, but the procedure was complicated by PEA arrest requiring CPR for about 50–60 mins. During episode, bedside TTE showed evidence of right ventricular dilation and RV strain concerning for a massive PE. She was cannulated for V-A ECMO then underwent therapeutic hypothermia, and was successfully decannulated after six days. Patient eventually recovered and was neurologically intact. She was discharged home on warfarin and aspirin. Hypercoagulable work-up was remarkable for heterozygous FVL mutation R506Q. Both her father and mother were found to have heterozygous FVL mutation and her sister was found to have homozygous FVL mutation.

Discussion People with FVL have additional risk factors that contribute to the development of DVT, and FVL alone does not increase the risk of developing arterial thrombosis, heart attacks and strokes. DVTs in heterozygous FVL population are considered provoked DVTs requiring anti-coagulation for a definite period, like that in general population. Curiously, patients with severe COVID-19 infection requiring ventilator support were found to have factor V levels high above the normal reference range and were found to have elevated risk for blood clots. Use of OCPs, and perhaps a recent COVID infection, although mostly asymptomatic, might have contributed to hypercoagulability in our patient. FVL mutation is not considered a contraindication to having COVID vaccination and patients with hereditary clotting disorders are recommended to have the vaccine.

Case Report A 23 year old Choctaw female with history of acute myeloid leukemia (AML) in first clinical remission presented with painful neuropathy and bilateral ascending paralysis. Two months prior, patient was diagnosed with AML and treated with induction therapy with cytarabine and daunorubicin, along with one dose of prophylactic intrathecal methotrexate due to high white blood count at presentation. About a month prior to presentation, she received Cycle 1 of consolidation with HiDAC. She tolerated consolidation therapy with HiDAC well and was discharged home. Three weeks following consolidation, she presented with acute onset of pain and progressive arm and leg weakness. ANA reflex, acetylcholine receptor antibody, Mu SK antibody and CSF paraneoplastic panel were negative. MRI of the spine, and brachial plexus were unremarkable. MRI of the brain with small incidental lesion was unremarkable. MRI of the brain with small incidental lesion was unremarkable. MRI with gadolinium contrast showed a right frontal lobe lesion thought to be due to a resolving infarct. Repeat MRI of the chest revealed a 1-cm pulmonary nodule which was thought to be secondary to metastatic disease. The patient’s beta-2 microglobulin was normal. Cytology without malignancy. Studies for GBM, GM1/2, GDMG, GR1B were negative. Due to concern of potential chemotherapy induced neurologic event, patient underwent plasma exchange for 5 sessions and was on a prolonged prednisone taper. Unfortunately, she failed to respond to these measures. Sural nerve biopsy was obtained which favored cytotoxicity.Repeat MRI brain revealed findings consistent with PRES sequela vs metabolic/toxic insults and encephalitis. Patient had a prolonged hospital stay after developing demyelinating polyneuropathy which led to her becoming ventilator dependent requiring tracheostomy placement. Due to her acuity of illness and lack of neurologic improvement, she was not given further chemotherapy. She subsequently developed a rapidly progressing relapsed AML with worsening leukocytosis, anemia and thrombocytopenia. Her clinical status continued to decline. She was developed a multiorgan failure requiring maximum pressors and cardioversion, and subsequently family elected to withdraw further life sustaining care. HiDAC regularly used as induction and consolidation therapy in AML patients. Although central nervous toxicity of HiDAC has been frequently reported and is well recognized, there are only a few publishes cases of polyneuropathy following its administration. Openshaw et al determined a 1% prevalence rate of demyelinating polyneuropathy among 194 courses of HiDAC (Openshaw et al 1996). Although different mechanisms of HiDAC toxicity and resulting polyneuropathy have been proposed, it still remains largely unknown.

Case Report Burkitt Lymphoma and Burkitt leukemia are classified as different manifestations of the same disease. A combination of several diagnostic methods including morphological, cytogenetics, chromosomal analysis, and immunophenotyping are necessary to diagnose B-Cell Acute Lymphoblastic Leukemia (B-ALL) with certainty. Cytogenetic abnormalities frequently seen in both manifestations include the translocations t(8;14)(q24;q11), and least frequently, the translocation t(2;8) (p12;q24) involving the immunoglobulin kappa gene locus on 2p12.

We present a rare case of a 51-year-old male patient without prior medical history who arrived at the urgency room after various episodes of epistaxis of two days of evolution as well as a petechial rash on the upper left arm and axilla. Peripheral blood examination showed hemoglobin of 10.4 g/dL, hematocrit 29.90 and platelets 23 x 10^8/L, white blood cells 12.8 x 10^9, with a lymphocytic predominance, atypical
lymphocytes, and immature cells. Increased LDH at 2700 IU/L, hypercalcemia of 15.2 mg/dL, and increased alkaline phosphatase at 531 IU/L, and total bilirubin 1.64 mg/dL. HIV test and Hepatitis panel were negative. Abdominal Ultrasound was remarkable for hepatosplenomegaly. No evidence of abnormal lymphadenopathy in the chest, abdomen, or pelvis. Bone marrow biopsy was compatible for B-ALL with increased TdT-positive lymphoblast as expected in ALL. Analysis of the flow cytometric data showed a population of B-lymphoblasts (CD10+/CD19+/CD20-/CD38+/HLA-DR+). Although the majority of the B-lymphoblasts were negative for surface light chain, a minority demonstrated a tendency towards lambda light chain restriction. Chromosome analysis showed an abnormal karyotype with an apparently balanced t(8:9) (q24.3;p13) involving MYC at 8q24.2 and an unknown gene on 9p13, together with the gain of chromosome X, 13, 20, and CRLF2 compatible with B-ALL with MYC rearrangement (formerly Burkitt leukemia). MYC translocations are known to be associated with an unfavorable prognosis in B-ALL.

The t (8:9) is a rare yet recurrent abnormality in B-ALL. Chromosomal aberrations in addition to t(8:14) are often present in B-ALL, most commonly affecting chromosomes 1, 6, 7, 13, 17, and 22. To the best of our knowledge, B-ALL with this unknown gene on 9p13, together with the gain of chromosome X, 13, and 20 have not previously been reported. Over 60% of patients diagnosed with B-ALL and additional aberrations will have a high risk for relapse or mortality. Literature review regarding treatment alternatives for patients with these cytogenetic changes in the adult population is scarce. Our patient was started on HyperCVAD chemotherapy as induction and will be evaluated by a bone marrow transplant center.

**AN UNDERDIAGNOSED HEMOLYTIC ANEMIA IN ALCOHOLIC LIVER DISEASE: ZIEVE SYNDROME**

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**Case Report** Anemia in alcoholics is a common finding which presents a broad differential diagnosis. An adequate classification requires a high index of suspicion. One of the causes is Zieve syndrome (ZS), a rarely reported disease with an unclear pathogenesis that results from alcohol abuse and consists of a triad: hemolytic anemia, jaundice and transient hyperlipidemia. This condition is frequently under-recognized and under-reported possibly due to physician unawareness and lack of pathognomonic signs or symptoms. We present a case in which a detailed evaluation for hemolytic anemia led to identification of a possible commonly missed diagnosis.

A 58-year-old male with medical history of chronic liver disease secondary to alcoholism presented to the ER due to a one-week onset of left arm and leg ecchymosis secondary to a fall. Vital signs were remarkable for sinus tachycardia and orthostatism. Physical examination revealed an oriented man, a benign abdomen, scleral icterus, a large ecchymosis in his left mid arm and left lower extremity. Distal peripheral pulses and sensation remained preserved. Imaging without evidence of fractures or dislocation and abdominal CT with contrast was remarkable for chronic hepatocellular disease and a left iliacus muscle hematoma without signs of active bleeding.

Laboratories revealed hemoglobin at 7.8 g/dL from 12 g/dL baseline, no leukocytosis, chronic thrombocytopenia, elevated total bilirubin with indirect predominance and multiple electrolytic deficiencies in the setting of malnutrition. Peripheral smear revealed anisocytosis with macrocytosis, buss cells and some target cells with associated elevated LDH, elevated reticulocyte count, decreased haptoglobin and negative direct antithrombin test. Lipid profile and vitamin E were normal. HIV and hepatitis non-reactive. Patient required a total of 4 units RBCs without signs of bleeding suspicious of non-immune hemolytic anemia. Patient’s hospitalization course then became complicated with alcohol withdrawal, septic shock secondary to aspiration pneumonia and hepatic encephalopathy requiring endotracheal intubation. Given poor prognosis, family decided for comfort measures.

When considering ZS the presence of acute-onset, extrinsic, non-immune hemolytic anemia helps distinguish the conditions. It is important to be aware of atypical presentations such as a normal lipid panel and vitamin E levels, which have been reported in literature and do not rule out the condition. Hyperlipidemia may be transient and can decrease before anemia presents. In these patients, anemia typically resolve with abstinence of alcohol intake. For this reason, it is important that clinicians confronted with hemolysis in a patient with alcoholic liver disease be aware of ZS as it will allow earlier diagnosis, prevent invasive intervention, and allow anticipation of supportive therapy with blood transfusions and nutritional supplementation.

**TWO UNEXPECTED CAUSES OF EOSINOPHILIA**

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**Introduction** Eosinophilia is a common finding in general medicine. Therefore, it is crucial to be aware of the multiple etiologies which can range from allergy/asthma, connective tissue disease, chronic infection/inflammation, medications, and uncommon hematological disorders such as myeloproliferative disorders. Here we present a patient case with chronic eosinophilia who surprisingly had two causative factors.

**Case** A 43-year-old African American male with chronic eosinophilia was referred to hematology clinic for our evaluation after seeing a local oncology practice for eosinophilia that was suspected to be allergic related. In addition to an extensive history and physical exam, IgE, BCR/ABL, ANA, ANCA were collected for the workup and were normal/negative. Strongyloloides IgG antibody was obtained and came back positive. Referral to Infectious disease was made regarding the concern for Strongyloidiosis and he was started on empiric treatment with Ivermectin. A CBC was repeated 3 months later revealed no improvement in eosinophilia. During this time, a previously collected CHIC2 (4Q12) deletion returned abnormal. This resulted in the diagnosis of Myeloid/Lymphoid neoplasm with PDGFR-A mutation. He then started on low dose Imatinib at 100 mg once daily with subsequent normalization of his complete blood count with differential one month later.

**Discussion** Strongyloidiosis, involving the helminth Strongyloides stercoralis, is endemic in rural areas of southeastern United States. Acute infection may have urticaria or irritation at the site of skin penetration, whereas the chronic stage of
strongyloidiasis is frequently asymptomatic. Treatment for patients with uncomplicated strongyloidiasis is with the anti-parasitic ivermectin. PDGFRA-related neoplasms are due to mutations on the long arm of chromosome 4 (4q12) leading to the fusion of FIP1L1 and PDGFRA. The most common presenting signs and symptoms are weakness, fatigue, cardiopulmonary symptoms, myalgias, rash, and fever, and with eventual progression to endomyocardial fibrosis with restrictive cardiomyopathy. Diagnosis is made by FISH for the CHIC2 probe and treatment utilizes low dose imatinib targeting PDGFRA.

Conclusion This case highlights the importance of maintaining a broad differential when undertaking an eosinophilia evaluation in a patient, whether from the general medicine or subspecialist standpoint. There are many causes for eosinophilia, two of which were discovered in this patient case as strongyloides infection and the hematological disorder of Myeloid/Lymphoid neoplasm with PDGFRA mutation. Although both are uncommonly found, it is crucial to consider these two etiologies in the general workup of eosinophilia.

A CASE OF WARM AUTOIMMUNE HEMOLYTIC ANEMIA
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Introduction Warm autoimmune hemolytic anemia (AIHA) is a rare clinical disease which usually arises during or after concomitant clinical pathologies. Autoantibodies are formed against the red blood cell membrane, destroying them and causing extravascular hemolysis.

Case A 68-year-old woman with medical history of anemia requiring transfusions, CAD s/p stents in 2007 and 2021, type 2 diabetes mellitus, hypertension, and COVID-19 infection nine months ago presented with chest pain and shortness of breath on exertion for two months. She described the pain as central, non-radiating chest tightness associated with dyspnea on exertion, which resolved with a few minutes of rest. She originally attributed this chest pain to her recent cardiac stent. Three weeks prior, She was treated for anemia (hemoglobin 5.4 gm/dL) with four units of packed red blood cells. Her hemoglobin increased to 7.9 gm/dL after transfusion with temporary improvement of her symptoms until this presentation. Her admit vitals were BP 154/65, HR 99, RR 20, O2 99% on room air, T 97.9°F. Physical exam was notable for generalized jaundice and scleral icterus. Laboratory results included hemoglobin of 6.5 gm/dL, MCV 106 fl, reticulocyte count 17.3%, peripheral blood smear with polychromatophilic, total bilirubin 6.5 mg/dL, lactate dehydrogenase 321 U/L, and haptoglobin <30 mg/dL. Her EKG and troponin were normal. She was found to have hepatosplenomegaly on abdominal ultrasound. Further workup showed a direct antiglobulin test was positive with anti-IgG and complement C3 antibodies. This result confirmed the diagnosis of warm autoimmune hemolytic anemia. She received one unit of packed red blood cells with a subsequent hemoglobin of 6.1 gm/dL. She was then started on rituximab and prednisone with an increase in her hemoglobin to 6.9 gm/dL prior to discharge. The patient was discharged on high dose prednisone, scheduled for further rituximab infusions and given close follow-up with hematology and PCP. Atovalquone was added for pneumocystis jiroveci pneumonia prophylaxis during rituximab and prednisone treatment.

Discussion Warm autoimmune hemolytic anemia is the most common type of AIHA, and its prevalence is approximately 170 per million. It can present with symptoms of chest pain, shortness of breath, and dyspnea on exertion which may at first seem to be cardiac in nature. However, further investigation with laboratory workup can reveal underlying hematologic abnormalities which can present similarly with more severe cases of AIHA. Approximately 50–60 percent of warm AIHA are associated with underlying conditions including EBV, HIV, HCV, lymphoproliferative disorders, and immunodeficiency states. It is important to consider AIHA in anemic patients with immunocompromised conditions. Cases have also been reported of new onset AIHA in association with COVID-19 infection, although there is no evidence yet of AIHA occurring several months after resolving COVID-19 infection.
continuous renal replacement therapy (CRRT) and vasopressor support.

Discussion Compartment syndrome is characterized by increased pressure within fascial compartments, leading to circulatory compromise, cellular necrosis, and rhabdomyolysis. In this case, the COVID-19 viral effect on coagulation led to extensive arterial thrombosis, complicated by compartment syndrome and renal failure necessitating CRRT. While the exact pathophysiology of the hypercoagulable state in COVID-19 illness is debated, we have observed its manifestations ranging from deep venous thrombosis (DVT), pulmonary embolism (PE), to stroke.

Conclusion COVID-19 is known to be a virulent, multifactorial, intelligent virus with myriad end-organ and vascular consequences. When attending to the most critically ill patients with COVID-19, it is wise to consider all forms of vascular thromboembolism.

#228 TRANSPLANT ASSOCIATED-THROMBOTIC MICROANGIOPATHY (TA-TMA) AND POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) IN A PATIENT WITH SICKLE CELL DISEASE POST BONE MARROW TRANSPLANT

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Case Report A 15-year-old male with history of severe sickle cell disease, five months post 10/10 HLA matched sibling donor bone marrow transplant, complicated by graft versus host disease (GVHD) of the skin and GI tract, hypertension, and steroid induced diabetes mellitus, presented in status epilepticus. The patient had presented one month previous with a pericardial effusion, proteinuria, and Coombs positive hemolytic anemia. He was admitted (transplant day +125) with severe headache and hypertension concerning for transplant associated thrombotic microangiopathy (TA-TMA) with supratherapeutic tacrolimus levels. Initial TMA work up was negative with normal terminal complement complex activity (sC5b-9). He was treated with Rituximab and IVIG with resolution of his pericardial effusion and Coombs+ hemolytic anemia and was discharged. Subsequent sC5b-9 activity was elevated in conjunction with hypertension requiring >1 anti-hypertensive agent, thrombocytopenia, microangiopathic (Coombs negative) hemolytic anemia, and schistocytes on blood smear, consistent with diagnosis of TMA. Treatment with eculizumab, a monoclonal antibody binding to terminal compliment complex C5, was initiated. Following his 3rd eculizumab treatment he presented with hypertensive emergency in status epilepticus and was confirmed to have PRES based on MRI. Multiple anti-epileptic medications (AEDs) were required to achieve cessation of seizure activity including propofol infusion for burst suppression. Patient slowly improved with continued eculizumab infusions and strict anti-hypertensive management as evidenced by compliance blockade and cessation of epileptic activity on EEG. Following a prolonged PICU stay he was transitioned first to the BMT inpatient service and subsequently required inpatient rehabilitation for several weeks. Currently, 6 months following these events, his neurologic status has returned to baseline, has no evidence of GVHD, and no longer requires eculizumab infusions for TMA.

Discussion TA-TMA with multi-organ dysfunction is a life threatening potential complication of bone marrow transplant caused by compliment over-activation. Multiple triggers for TMA have been identified including calcineurin inhibitors, GVHD, and viral infections. Prospective studies have demonstrated importance of monitoring for compliment over activation in high-risk patients to allow early diagnosis and treatment in improving patient outcomes. Treatment of TMA requires brief but intensive courses of eculizumab.

Conclusion This case outlines the importance of early identification and treatment of TMA in patient outcomes and the delicate balance of controlling compliment activation and maintaining effective prophylaxis and treatment of GVHD.

#229 COVID-19 PFIZER-BIONTECH VACCINE INDUCED VTE

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Case Report Between December 2019 and May 2021, there were around 200 million cases of COVID-19, with more than 3.5 million deaths all over the world. In the United States alone, there were more than thirty million cases, with around six hundred thousand deaths attributed to COVID-19. Incidents of hypercoagulability after receiving different types of COVID-19 vaccine have been reported. The incidence of deep vein thrombosis (DVT) is about 1 in 1000, and about 50% of these patients with DVT develop pulmonary embolism (PE). The incidence of DVT affecting the upper extremity exceedingly rare with an approximate incidence of 1 in 10,000. While patients receiving anticoagulation are still at risk of DVT, data on apixaban reflects a 98% protection from recurrent thrombosis.

Hypercoagulability including DVT and PE is always a rising concern in patients with COVID-19 pneumonia. We are reporting a case of a hypercoagulability state in 73-year-old lady after receiving first and second dose of Pfizer vaccine; despite being on apixaban. she has a past medical history of COPD on 2 L home oxygen. She presented with acute hypoxic respiratory failure few days after receiving the first dose of COVID-19 Pfizer vaccine. Imaging revealed right interlobar pulmonary embolism and right superficial femoral vein thrombosis without any provoking factors. She improved clinically and was discharged on apixaban. Few months later she came in with right upper extremity DVT, 7 days after receiving a second dose of Pfizer vaccine. Transesophageal Echo revealed a round mass in the left atrial appendage, which was likely a thrombus, she was discharged on warfarin.

Incidence venous thromboembolism is about 1 in 1000 individuals in the United States. Several factors can increase the hypercoagulable state. SARS-COV-2 is hypothesized to increase the risk of thromboembolism by infecting cell expressing surface receptors of ACE-2 by binding the SARC0V2 spike protein and activating cell pyroptosis which activates neighboring cells inflammatory response and then activate coagulation pathway. BioNTech mRNA vaccine induces immune response by engulfing S protein mRNA into the cell to produce spike protein and induce antibody production against SARS-COV2 spike protein. At this time, this is the Third reported Vaccine related VTE after reporting a Pfizer BioNTech vaccine induced DVT on January 2021 After ruling
Introduction May Thurner Syndrome, also known as iliac vein compression syndrome, is a rarely diagnosed condition that is classically described as compression of the left common iliac vein by the overlying right common iliac artery resulting in subsequent deep venous thrombosis (DVT) of the iliofemoral veins. It most commonly affects women between the ages of 25–50 years old with a reported prevalence of approximately 20%. Here we present an atypical presentation of May Thurner syndrome due to extrinsic malignant mass compression with formation of a large left lower extremity DVT.

Case presentation A 67 year old male with a large sigmoid colon adenocarcinoma presented to the ED with complaints of syncope and left lower extremity swelling and pain of several days duration. He was admitted to the intensive care unit for hypovolemic shock in the setting of acute gastrointestinal bleeding and was stabilized after transfusion of blood products. Computed tomography (CT) scan of the chest, abdomen, and pelvis with contrast demonstrated a pulmonary embolism and a large 6 cm mass in the sigmoid colon with compression of the left common iliac vein (Image). Doppler ultrasound of the left lower extremity confirmed the presence of a large acute obstructive deep venous thrombosis extending from the left common femoral vein to the left popliteal vein. Subsequent endoscopy and colonoscopy showed mucosal infiltration of the mass with chronic bleeding. Interventional radiology was consulted for the possibility of stent placement in the left common iliac vein, but due to the patient’s inability to tolerate anticoagulation in the setting of chronic bleeding he was not deemed a good candidate. After discussing the severity and extent of the patient’s cancer burden and prognosis he was agreeable to hospice care and discharged.

Discussion May Thurner Syndrome is an underdiagnosed vascular disorder resulting from compression of the left common iliac vein. Our case presents an atypical presentation of this pathology with a difficult treatment dilemma. The current literature suggests that systemic anticoagulation alone is insufficient for management. The propensity for clots is generated by venous stasis distal to the anatomic compression. Stent placement in the area of compression is warranted with subsequent anticoagulation for at least 6 months to minimize risk of stent thrombosis. Unfortunately in this case, the patient was at a very high bleed risk secondary to his malignancy, and could not tolerate anticoagulation for any length of time.

out other causes of VTE in this case as well as the time between receiving the vaccine and the onset of symptoms, vaccine-induced thrombosis is the most likely cause for our patient’s thrombosis, including venous thrombosis, pulmonary embolism, and left atrial appendage thrombosis. The mechanism remains unknown but may possibly be due to enhanced immune response to the vaccine.

In patients at increased risk of thrombosis, BioNTech mRNA vaccination may induce Intravascular Coagulation, venous thromboembolism, possibly due to enhanced immune response to spike protein production.

He was also not deemed a surgical candidate due to the significant tumor burden, metastases, and infiltration of surrounding structures.
patient was prescribed acetaminophen, naproxen, and oxycode- 
done with close follow-up in chronic pain clinic.

Bone pain, pancytopenia, and hepatosplenomegaly are con-
sistently associated with malignancy; however, it is important
to include genetic abnormalities, like Gaucher disease, in the
differential diagnosis. There are three distinct types of this 
rare inherited genetic disorder. Because the most common 
form can occur at any age, prompt diagnosis is crucial to pre-
vent long term effects of Gaucher disease.

### #232 QUESTIONING THE USE OF ABSOLUTE NEUTROPHIL 
COUNT TO DIAGNOSE SPONTANEOUS BACTERIAL 
PERITONITIS IN PATIENTS WITH MALIGNANT ASCITES


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**Purpose of Study** Spontaneous Bacterial Peritonitis (SBP) is defined as an infection in the ascitic fluid (AF) without evidence of an intra-abdominal infection. It occurs almost exclusively in patients with cirrhosis and it is seen in up to 30% of hospitalized patients. It is reported to be rare in patients with malignant ascites (MA) occurring in less than 5% of patients. The gold standard to establish the diagnosis of SBP is a positive AF bacterial culture. However, studies in patients with ascites secondary to cirrhosis and portal hypertension demonstrated that an absolute neutrophil count (ANC) \( \geq 250 \) cells/ 


### Summary of Results

Categorical variables. Linear regression was used to adjust for poor patient outcomes. Wilcoxon rank-sum tests were used to compare continuous variables. Results in patients with ascites due to cirrhosis and portal hypertension demonstrated that an absolute neutrophil count (ANC) \( \geq 250 \) cells/ mm\(^3\) highly correlated with positive cultures and became the diagnostic test used in clinical practice. There is very limited data evaluating the ANC count in patients with MA. We hypothesized that ANC alone may not be enough to diagnose SBP in patients with MA. The purpose of this study is to describe the characteristics of AF in patients with MA, with particular emphasis on ANC and compare them with the AF in patients with other conditions (cirrhosis, SBP; liver metastasis).

**Methods Used** We identified all patients with cytology proven malignant ascites treated at University Medical Center New Orleans New Orleans between an 8-year period as well as patients with ascites due to other conditions. Patients were identified through tumor registry, pathology databases, and medical and surgical oncology clinics. Fisher exact tests were used to compare categorical variables across ascites groups and Wilcoxon rank-sum tests were used to compare continuous categorical variables. Linear regression was used to adjust for potential confounders in assessing the relationship between type of ascites and the logarithm of ascites ANC.

**Summary of Results** We identified 50 patients that met inclusion criteria (35 with malignant and 15 with benign ascites and no SBP). The primary outcome of interest was whether ascites ANC differed between ascites type. We found that the ascites ANC of malignant ascites was significantly higher than benign patients (average 2187.46 vs 132.11, p-value=0.001). 34% of patients with MA had ANC > 250. Multivariable linear regression model predicting log of ascites ANC value shows that the only significant predictor of ascites ANC is ascites type (Estimate = -2.17, 95% CI = -3.69,-0.65, p-value <0.001) indicating that the log of ascites ANC value decreases if a patient has benign ascites compared to malignant ascites. MA also had higher albumin, LDH and RBCs.

**Conclusions** Our study confirms that malignant ascites is characterized by a high ANC compared to ascites in cirrhosis.

Using ANC alone may not be enough to diagnose SBP in patients with malignant ascites. Limitations to this study include small sample size and retrospective analysis. Our patients with MA and high ANC could indeed have SBP. If so, a very large proportion of our patients with MA had SBP, which contradicts the literature. In future analysis, we will compare the characteristics of MA with that of SBP.

### #233 SINONASAL MELANOMA – A DRAMATIC DIAGNOSTIC 
TURN OF EVENTS

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**Case Report** Sinonasal melanomas are a rare entity in comparison to cutaneous melanomas. Here we share a case with this diagnosis.

An 82-year old male presented with persistent tooth pain, sinus headache, and right nasal drainage. Evaluation by otolihonarlogy detected a right sinus mass. Biopsies were inconclusive and then sent to an outside tertiary center. He developed severe pain, apraxia/opthalmoaglegia, fixed pupillary dilation, and vision loss of the right eye. Magnetic resonance imaging of the face and sinuses showed a large mass eroding through the middle and superior turbinates, extending past midline, into the right orbit, maxillary sphenoid, and through the cribiform plate. There was dural enhancement, suggesting perineural spread without overt brain parenchyma invasion. The tumor was deemed unresectable. Positron emission tomography scan noted a station IIB left hypermetabolic cervical lymph node and a non-hypermetabolic right lower lobe lung nodule. The pathologic diagnosis was an exhaustive effort, requiring reviews of three pathologists. Ultimately, malignant melanoma with rhabdoid features was confirmed. Immunohis-
tochemistry (IHC) revealed SOX10 focally positive, a marker seen in melanoma but negative for other melanoma markers such as MART1 and S100. BRAF mutation was negative. A tentative stage III versus Stage IV status was confirmed after multidisciplinary discussion. Palliative radiation to the right sinus and left neck was administered followed by palliative immunotherapy with pembrolizumab. The patient was able to complete one cycle before declining. Several weeks later, he succumbed to his disease.

As 90% of head and neck cancers are of squamous cell his-
toology, this case shares a rare instance of sinonasal melanoma without classic IHC markers. Greater than 90% of melanomas are cutaneous, about 5% uveal in origin, and 1% are mucosal melanomas. Among the rare mucosal melanomas, head and neck (55%), anorectal (24%), and vulvovaginal (18%) are the common anatomic sites of origin than the urinary tract, small bowel, and gallbladder. For melanomas arising in the head and neck, 70% develop in the sinuses and nasal cavities. Forty percent of mucosal melanomas are amelanotic, whereas amelanosis is noted in less than 10% of cutaneous melanoma. Etiology, risk factors, and pathogenesis are largely unclear. These tumors can be difficult to diagnose and often IHC is vital. Unlike cutaneous melanoma, data on treatment specifically for sinonasal/mucosal melanoma is limited. Surgery and radiotherapy are used when feasible. Systemic therapy may include immunotherapy and targeted therapy as in cutaneous melanomas.
Abstracts

The prognosis of sinonasal melanoma is grim with a mean 5-year survival is estimated to be 0–30%. Early diagnosis is challenging but may assist curative approaches. Although a rare pathology, sinonasal melanoma can be a consideration in the differential diagnosis of persistent upper respiratory symptoms even if seemingly innocuous.

#234 DERMATOMYOSITIS, THE GREAT PREDICTOR
10.1136/jim-2022-SRMC.232

Case Report A 59-year-old male with newly diagnosed dermatomyositis four months prior to admission presented with a complaint of left neck swelling that he noticed the morning prior to presentation. The swelling was non-tender and did not affect his swallowing or breathing. Other complaints at this time included skin rash and proximal muscle weakness that the patient stated were improving since he was started on prednisone by his dermatologist. His vital signs were normal, and his physical examination was significant for left sided supraclavicular lymphadenopathy that was non-tender, firm, and mobile. Skin examination was significant for heliotrope rash, gottron papules on both hands, and a rash on the extensor surfaces of both upper extremities. CT imaging of the neck revealed lymphadenopathy of the left supraclavicular and infracavicular regions. Follow-up CT chest and CT abdomen/pelvis revealed a proximal gastric mass with extensive regional adenopathy, EGD demonstrated a large, fungating, ulcerated, and partially circumferential mass extending from the gastroesophageal junction to the posterior wall of the stomach. These findings were highly suspicious for malignancy. Biopsies of the mass were taken and the pathology is currently pending.

Discussion Dermatomyositis is an idiopathic inflammatory myopathy that can develop as a paraneoplastic process. In patients with dermatomyositis there is a six-fold higher risk of malignancy compared with the general population. Therefore, following the diagnosis of dermatomyositis, patients, should at minimum, undergo age-appropriate cancer screening. Our patient with recently diagnosed dermatomyositis presented with new lymphadenopathy concerning for malignancy and further work-up revealed that the malignancy was likely gastric in origin. This patient had received age-appropriate cancer screening including colonoscopy yet went undiagnosed. The cancers linked to dermatomyositis may go undiagnosed by only following age-appropriate screening guidelines as these cancers may arise from sites not routinely screened. Therefore, blind screening may be appropriate for patients with newly diagnosed dermatomyositis, who do not have any suspicious clinical findings.

#235 OUTCOMES OF CENTRAL NERVOUS SYSTEM LYMPHOMA TREATED WITH NON-THIOTEPA BASED CONSOLIDATION CHEMOTHERAPY AND AUTOLOGOUS STEM CELL TRANSPLANT
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10.1136/jim-2022-SRMC.233

Purpose of Study To investigate and report outcomes for patients with either primary or secondary CNS lymphoma who received a non-thiotepa based consolidation chemotherapy, specifically Busulfan, Cyclophosphamide, and Etoposide (BuCyE), with autologous stem cell transplantation (ASCT). Although recent studies have suggested superior outcomes with thiopeta base regimens, there continues to be difficulty obtaining thiopeta for some patients due to recurrent national shortage, insurance coverage and cost within our patient population. In addition, the doses of BuCyE used at Tulane are higher (Bu:3.2 mg/kg on Day –8 through Day –5, E:30 mg/kg on Day –4, Cy:50 mg/kg on Day –3 and Day –2) than those reported in the literature when compared to thiopeta based regimens (Bu: 3.2 mg/kg on Day –7 to Day–5, E:200 mg/m2 once daily on Day –5 and Day –4 OR 200 mg/m2 twice daily on Day –5 and Day –4, Cy:50 mg/kg on Day –3 and Day –2). With this in mind, we set out to identify and report the outcomes of patients treated within our facility with BuCyE consolidation therapy and ASCT for CNS lymphoma.

Methods Used We conducted a retrospective case series in which we identified patients who were treated for CNS lymphoma with BuCyE consolidation chemotherapy and ASCT from the year 2005 through 2021 at Tulane University. We obtained clinical information via retrospective chart review.

Summary of Results We identified a total of three patients, 1 patient with primary CNS lymphoma and 2 patients with secondary CNS lymphoma who were treated with BuCyE consolidation and ASCT within our facility since 2005. To date, all patients remain alive, with follow-up times as follows: 7 years for the patient with primary CNS lymphoma; 7 years for the patient with a secondary CNS lymphoma who achieved complete remission and was discharged from our institution to his local oncologist for routine follow up; 3 years for the second patient with secondary CNS lymphoma who continues to follow up while maintaining clinical remission. In contrast with the literature, our improved outcomes could be linked to the higher doses of BuCyE used which could result in improved CNS penetration and anti-lymphoma effect.

Conclusions Although a small cohort, our three patient case series suggests that the BuCyE consolidation regimen that our facility protocol follows may extend survival times as compared to initially reported (Median OS reported: 4.9 years). We believe that our extended survival times in these three patients may be due to increased dosing as compared to prior literature. With these findings, we suggest that future investigations, possibly with higher dosing of Busulfan and Etoposide, may further clarify the optimal regimen as compared to thiopeta based regimens for patients with CNS lymphoma.

#236 TO ERR IS HUMAN: A CASE OF POEMS SYNDROME
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10.1136/jim-2022-SRMC.234

Introduction POEMS syndrome (polyneuropathy, organomegaly, endocrinopathy, monoclonal protein, and skin changes) is a rare plasma cell neoplasm that is often difficult to diagnose. Here we present a case of POEMS syndrome with significant morbidity due to delayed diagnosis.

Case Description A 53 year-old male presented to his primary care physician with new-onset peripheral edema and numbness and tingling in his extremities. Chest x-ray and
echocardiogram were within normal limits, and he was pre-
scribed increasing doses of furosemide. Neuropathic symptoms
were initially treated with gabapentin. Several months later he
began having shoulder pain, MRI showed focal areas in the
right proximal humerus concerning for multiple myeloma.
Serum protein electrophoresis showed a small IgA lambda and
IgG kappa bicalon gammopathy at 0.5 g/dL. Kappa and lamba
light chains were both mildly elevated (kappa 3.1 mg/ dl; lambda 2.9 mg/dL). Free light chain ratio was normal at
1.1. On laboratory evaluation he was noted to have thrombo-
cytosis but no anemia, renal insufficiency, or hypercalcemia.
CT scans of the chest, abdomen, and pelvis showed multiple
sclerotic bone lesions in the axial and appendicular skeleton.
PET scan also showed widespread axial and appendicular oss-
ous lesions. Two bone biopsies were nondiagnostic.

During this time his neuropathy progressively worsened to
the point where he was having difficulty walking, and he
developed bilateral contractures and clawing of his hands. He
was unable to work due to his symptoms. MRI spine showed
only his known sclerotic bone lesions without evidence of
cord compression. Electromyogram showed ongoing very
severe sensory motor large fiber primarily axonal neuropathy
with demyelinating features. Bone marrow biopsy showed
5–10% polyclonal plasma cells with only a very small kappa
(0.1%) and lambda (<0.1%) bicalon population by flow
cytometry. Vascular endothelial growth factor (VEGF) level
was elevated at 200 pg/mL (upper limit of normal, 96.2 pg/
ml). He was diagnosed with POEMS syndrome and is cur-
tently undergoing treatment with lenalidomide and
dexamethasone.

Discussion This case illustrates the significant morbidity
patients with POEMS syndrome can suffer due to delayed
diagnosis. The presence of a monoclonal (M) protein and
peripheral neuropathy are required for diagnosis, but the mag-
nitude of the M-protein is usually small (around 1 g/dL). The
minor features of the disease are easily overlooked, such as
peripheral edema and thrombocytosis as in our patient.
Peripheral motor neuropathy typically dominates the clinical
picture, and it is not uncommon for patients to be wheel-
chair-bound at diagnosis. Almost all patients will have osteo-
sclerotic bone lesions. Treatment with lenalidomide-based
regimens is first-line and symptoms will improve. Younger,
fit patients may be considered for autologous stem cell trans-
plant. Improved knowledge and awareness of this syndrome will aid
in faster diagnosis.

#237 DON’T LOOK AT MY BELLY, LOOK AT MY HEART –
PERICARDIAL EFFUSION FROM AN OCCULT
MALIGNANCY
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10.1136/jim-2022-SRMC.235

Introduction Malignant pericardial effusion is a serious mani-
festation of some advanced malignancy. Of this, lung and
breast cancer along with leukemia and lymphoma are the
most common etiologies of malignant pericardial effusion.
Even though most patients have a known malignant tumor
before any evidence of pericardial involvement, sometimes
malignant pericardial effusion can be the initial presentation.
Therefore, malignancy must be excluded in every case of an
acute pericardial disease, especially with cardiac tamponade at
presentation.
Case Presentation A 52-year-old male with a history of hyper-
thyroidism, diabetes mellitus, and hypertension presented with
progressively worsening shortness of breath of 2 days duration
and fatigue for the past 4 months. He quit smoking 20 years
ago. While initial vitals seemed normal, pulsaus paradoxus of
10–12 mmHg was noted on physical examination. This was
checked due to distant heart sounds, jugular venous distention,
and low voltage QRS on EKG. He also had reduced right
lower lung breath sounds. His initial labs showed neutrophilic
leukocytosis, otherwise no anemia, thrombocytopenia, electro-
lyte, kidney or liver abnormalities. Chest X Ray revealed
moderate lobar collapse and pleural effusion and cardiome-
galy. Echocardiogram demonstrated a large circumferential
pericardial effusion with evidence of cardiac tamponade and
he underwent urgent pericardiocentesis, with removal of 1.5L
of red, turbid pericardial fluid. Cytological analysis of the
pericardial fluid showed metastatic adenocarcinoma of an
unknown primary source. CEA, PSA, LDH were within
normal limits. CT abdomen was significant for chronic cholectyti-
is otherwise no masses. CTA chest was unremarkable of visible
masses but rather multiple, enlarged, bilateral mediastinal and
hilar lymphadenopathy. Colonoscopy and endoscopy with
biopsies were negative for malignancy. In search of the pri-
mary malignancy, endobronchial ultrasound-guided biopsy was
performed and the cells obtained stained positive for cytokerat-
in 7, TTF1, NapsinA, and BerEP4, consistent with metastatic
adenocarcinoma from primary lung cancer. Similarly, a diag-
nostic thoracentesis was performed and cytology was consis-
tent with malignant pleural effusion from metastatic adenocarcinoma. All throughout, oncology was consulted and
decision was made to start the patient on palliative
chemotherapy.

Discussion This patient with no known malignancy presented
with clinical and echocardiographic signs of tamponade. Peri-
cardial cytology was positive for adenocarcinoma from an
unknown source. Interestingly, CT scans were unrevealing of
masses but rather hilar lymphadenopathy, and it was only
through the endobronchial biopsy that we were able to iden-
tify the primary source as lung cancer. Hence the etiology of
pericardial effusions should always be investigated as malign-
ancy can be a devastating cause of pericardial effusion.

#238 VITAMIN B12 DEFICIENCY CAN BE SEVERE ENOUGH TO
MIMIC TTP
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10.1136/jim-2022-SRMC.236

Case Report Microangiopathic hemolytic anemia (MAHA) is
one of the presentations of TTP. If not diagnosed early, TTP
can have severe complications including ischemic colitis, pro-
gression to end-organ failure, and death. However few other
conditions can also present as TTP, we report a case of a
patient who presented with macrocytic anemia, thrombocyto-
penia, high lactate dehydrogenase, and bilirubin, schistocytes
on peripheral blood smear mimicking TTP but negative
ADAMTS13 and low vitamin B12 levels.

64-year-old male patient, with a history of untreated
chronic vitamin B12 deficiency, hypertension, hypothyroidism,
presented to the ER with shortness of breath, lightheadedness progressively worsening from the past 3 weeks. On initial presentation, the patient was alert and oriented, afebrile with stable vitals. The physical exam was unremarkable except for mild scleral icterus. Lab work was significant for severe anemia with hemoglobin of 5.8 g/dL, MCV:136.7 fL, platelet: 42L K/cumm. The patient received two units of blood on presentation. Further lab studies were significant for WBC of 4.4L K/cumm, HCT 17.0 L%, lactate dehydrogenase level: 2049 IU/L, haptoglobin <8L mg/dL, total bilirubin: 2.5 mg/dL, vitamin B12 level: 67 pg/mL (180 – 914), serum folate level: 11.62 ng/mL (5.2 – >20), reticulocyte count: 3.64H% (0.7 – 2.9). Chemistry profile, direct antiglobulin test, fecal occult blood test, ANA comprehensive panel, hepatitis profile was negative and coagulation profile, thyroid profile, methylmalonic acid levels were all within normal limits. Initially at presentation ADAMTS13 activity was pending, the patient received steroid treatment along with urgent plasmapheresis. Repeat smear on the third day of admission showed 2–3+ schistocytes. Eventually, ADAMTS13 activity came back within normal limits. Intrinsinc factor antibody came positive, further strengthening vitamin B12 deficiency diagnosis. Clinical improvement was seen when the patient was provided with intramuscular vitamin B12 therapy with 1000 mcg daily for 1 week followed by 1000 mcg weekly for four weeks. Repeat vitamin B12 levels after 1 month of initial therapy were normal including his MCV and platelet count. The patient was advised to take his vitamin B12 monthly injections and was closely followed up by a hematologist.

Vitamin B12 deficiency is not commonly seen with hemolytic anemia, upon literature review few cases have been reported where vitamin B12 deficiency can mimic hemolytic anemia but thrombotic microangiopathy with the presence of schistocytes on the peripheral smear is rarely seen. With this case, we highlight an unusual presentation of severe vitamin B12 deficiency. If suspicion for TTP is high, prompt and accurate diagnosis of TTP is necessary in order to start emergent plasmapheresis, but at the same time, physicians should also recognize that severe vitamin B12 deficiency can also present similarly, in which case treatment would simply be vitamin B12 supplementation.

Infectious diseases, HIV, and AIDS

Joint plenary poster session and reception

4:30 PM

Thursday, February 10, 2022
productive cough. However, one day before arriving to hospital, symptoms worsened and made him look for medical aid. Physical exam was remarkable for hypoactivity, high-fever, tachycardia, hypotension, dry oral mucous, bilateral diffuse crackles and ronchies, 3/6 holosystolic murmur at both sides of sternum, bilateral lower extremity pitting edema, presence of multiple needle track marks, multiple lower extremity purulent ulcers surrounded by erythema and edema, and lower extremity weakness (3/5). Labs were suggestive of an acute infectious process, myocardial demand ischemia, and moderate dehydration. Chest CT was remarkable for cardiomegaly, presence of multiple septic embolies, and small pleural effusions on both lung fields. EKG showed sinus tachycardia and left ventricular hypertrophy. Transthoracic Echo demonstrated evidence of mild anterior pericardial effusion, and presence of large vegetations at aortic, tricuspid, and mitral valves. Blood Cultures came back positive for Methicillin-Sensitive Staphylococcus Aureus (MSSA) in three bottles. Organism was treated with nafcillin IV. Later on, case was complicated by the development of bilateral spontaneous hydro pneumothoraxes and patient succumbed before valve replacement was achieved.

Even though extremely rare, MSSA-Triple-valve endocarditis possess a high-mortality rate if not promptly treated. Therefore, despite its sensitivity, MSSA-endocarditis should be treated aggressively from the start to avoid development of further complications.

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**RICKETTSIAL MENINGITIS**

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10.1136/jim-2022-SRMC.239

**Case Report**

Rickettsial infections are caused by *Rickettsia* species of obligately intracellular gram-negative bacteria found in ticks and can cause Rocky Mountain spotted fever (RMSF). RMSF is the most common rickettsial infection in the United States. The incidence rate of RMSF ranges by state. Most cases of RMSF occur in the spring and early summer when outdoor activity is most frequent.

A 73-year-old male, with a history of rheumatoid arthritis and on weekly Methotrexate, was presented with complaints of fever for 5 days associated with a severe headache. His temperature was up to 101.2°F. He denied any rash, cough, SOB, nausea, vomiting, diarrhea, abdominal pain or urinary symptoms. Physical examination was unremarkable.

Initial blood work was significant for WBC count of 17 k/μL, Hgb of 13.5 g/dL and platelet count of 140 k/μL. Chest X-ray was negative for focal pneumonia. His MRI of the brain was negative for paraspinal abscesses and other intracranial abnormalities. He underwent lumbar puncture and the CSF analysis revealed WBC of 1376, RBC 0.0, PMN 94%, Protein 217 and Glucose 23. *Cryptococcus* Ag, gram stain, cultures, meningitis panel by PCR, mycology culture and AFP culture were all nonrevealing. RMSF IgM was positive. The patient received a course of intravenous ceftriaxone and doxycycline for two weeks with complete recovery.

The typical presentation of Rickettsial infection is fever, headache and skin rash. However, the absence of skin rash should not exclude the diagnosis. Definitive diagnosis relies mainly on serology that can be limited in the initial phase, emphasizing the need for high clinical suspicion. Rickettsial infection may present as meningitis and should be included in the differential diagnosis.

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**NOCARDIOSIS WITH DISSEMINATION TO THE SKIN AND THE CENTRAL NERVOUS SYSTEM IN A PATIENT WITH END STAGE RENAL DISEASE AND DIABETES MELLITUS**

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10.1136/jim-2022-SRMC.240

**Case Report**

Nocardiosis is a disease caused by a weakly acid-fast gram positive bacillus that has branching morphology. The bacteria can be found in the environment in soil. It is usually an opportunistic infection. However, in immunocompromised hosts it can cause disseminated disease. We report a case of nocardiosis caused by *Nocardia brasiliensis* with dissemination to the central nervous system (CNS) and skin.

An 80-year-old man presented to the ER with shortness of breath, fever, chills, diarrhea, bilateral leg swelling and bilateral leg lesions of three days duration. His wife also noticed that his mental status was altered. A physical exam revealed multiple bilateral erythematous nodules in his lower extremities. Some of the nodules had central pustules, and others had central eschars. His blood pressure was 107/44, and he was afebrile. His oxygen saturation was low, and he was started on oxygen via nasal cannula. The rest of the physical examination was unremarkable. His medical history was significant for end-stage renal disease, diabetes mellitus, and heart failure. Social history was significant for gardening. The patient was allergic to multiple antibiotics. Laboratory tests showed mild leukocytosis with neutrophilia, hyponatremia, elevated BUN, elevated creatinine, hypoalbuminemia and elevated proBNP. The skin lesions were initially treated as cellulitis with vancomycin and aztreonam. However, when pus from the skin lesions was cultured, it grew *N. brasiliensis*. Subsequently, vancomycin and aztreonam were discontinued and linezolid was started. Linezolid was later changed to trimethoprim-sulfamethoxazole. A computerized tomography scan of the chest showed moderate bilateral pleural effusions, left upper lobe opacities, and mediastinal lymphadenopathy. Magnetic resonance imaging of the brain showed pus within the lateral ventricles as well as within the posterior aspect of the posterior fossa going with ventriculitis. His mental status improved with antibiotic therapy, but it did not return to his baseline. His skin lesions formed central eschars when healing. Due to the multiple comorbidities and his functional status, the hospice route was chosen, and the patient was discharged to home hospice care.

Nocardiosis is disease that can mimic other diseases. It can be an acute, subacute, or chronic infection. It can also be limited to the lungs, skin, or can disseminate in immunocompromised hosts. *Nocardia brasiliensis* is the most common cause. The patient had two chronic diseases, diabetes mellitus and end-stage renal disease, that could have decreased his immunity. Bilateral involvement of his lower extremities makes a cutaneous infection as the source of entry unlikely. It is speculated that the patient had pulmonary involvement with dissemination to his skin and central nervous system (CNS). His altered mental status is likely due to the CNS involvement. Due to the variable clinical picture, nocardiosis is difficult to diagnose unless suspected.
Case Report We report here a case of a 26-year-old woman at week 29 of a pregnancy who was transferred to our hospital for OB/GYN care after on the same day she presented to an outside facility for one day of vaginal bleeding. At the transferring facility she was noted to be hypertensive with concerns for pre-eclampsia, acute kidney injury and non-reactive stress test. She had not had any pre-natal care or screenings done. Upon arrival she was normotensive but became obtunded and emergently taken to the OR. She was found to have a 50% placental abruption with uterine atony, hemorrhaging, and unfortunately fetal demise. She tested positive for SARS-CoV-2 on screening though she had no initial respiratory symptoms. Following extubation, she was noted to have very labored breathing, continued disorientation, and repeatedly stated that she was blind. She was subsequently re-intubated both to protect her airway and due to her work of breathing. Chest imaging showed bilateral patchy opacifications of her lungs and she was initiated on treatments for COVID-19 pneumonia. She was hypolymphocytic at this time with an absolute lymphocyte count of 800 cells/mm. She had not been vaccinated against SARS-CoV-2.

Over her hospitalization, she underwent extensive workup. For her complaints of vision loss she underwent ophthalmologic exam which did not find uveitis or other changes consistent with syphilis but rather for ischemic central retinal vein occlusions. She had persistent hypoxic respiratory failure and ultimately necessitated tracheostomy due to prolonged dependence of mechanical ventilation support. Approximately 1 month after her hospitalization, she developed a new left lower lung opacification as well as scattered tree-in-bud nodular findings on chest CT imaging. On bacterial and culture workup she grew methicillin-susceptible *Staphylococcus aureus* as well as *Aspergillus* species (identification still pending). She was treated with a short course of cefazolin for bacterial pneumonia and was started on a 3-month course of isavuconazonium sulfate for probable COVID-19-associated pulmonary aspergillosis (CAPA). After a two-month long hospitalization, she had gradual clinical improvement and was transferred to a skilled nursing facility for long-term care.

In this case, the devastating impact of COVID-19 disease in a young, unvaccinated, and pregnant woman is clearly seen, as are multiple sequelae. She unfortunately lost her pregnancy and developed severe visual impairments and several opportunistic respiratory infections. Her placental abruption, ischemic retinal vein occlusions and pulmonary aspergillosis were all felt to be directly attributable to her COVID19 disease. The case presented here serves as a cautionary tale that even the young are at risk for severe COVID-19 disease. Healthcare professionals should continue to advocate for screening and vaccination for these high-risk individuals.

**Abstract #244 Figure 1** Chest x-ray (left) demonstrating large right upper lobe opacity; CT Chest (right) with impressive right lung opacity

The detection of pulmonary tuberculosis (TB) can be challenging at times. Imaging, clinical signs and symptoms, and the patient’s background can provide clues that point towards TB, but the official diagnosis relies on several various methods. AFB sputum staining is usually quickly done and if positive, can effectively diagnose and guide therapy for patients. However, it can often be unreliable in detecting TB, with about half being smear negative, especially in the HIV population. In these patients, basing the diagnosis of smear negative TB off of clinical symptoms and judgements is even more challenging as these patients have a wider differential including opportunistic bacterial, fungal and viral pneumonias. In our case, MTB PCR was able to accurately detect pulmonary TB, while other methods failed. In immunocompromised patients, conventional techniques in diagnosing TB may not be reliable and more thorough approaches are warranted.
#245 AIDS-RELATED KAPOSI SARCOMA IN WELL-CONTROLLED HIV
10.1136/jim-2022-SRMC.243

Introduction Kaposi Sarcoma is an angio-proliferative malignancy characterized by spindle-cell morphology commonly associated with human herpes virus-8. In the era of anti-retroviral therapy, the incidence of Kaposi Sarcoma in HIV-infected patients has diminished significantly. We present a case of Kaposi sarcoma in a patient with well-controlled HIV.

Case A 43-year-old man with past medical history of HIV on anti-retroviral therapy (last CD4 count 1024 and undetectable viral load several months prior to presentation) and rheumatoid arthritis on hydroxychloroquine presented with severe right knee pain with recurrent swelling. He reported fever, chills, right groin swelling and inability to move or bear weight on his right knee. Initial vital signs were significant for tachycardia and low-grade temperature. Physical exam was significant for limited passive range of motion of the right knee, which was warm, erythematous, tender to palpation and associated with right-sided inguinal lymphadenopathy. No cutaneous lesions were present. Arthrocentesis demonstrated septic arthritis, and broad-spectrum antibiotics were initiated. Right inguinal lymph node biopsy revealed spindle-cell neoplasm expressing HHV8 and CD34, consistent with Kaposi Sarcoma. After discharge, he was started on liposomal doxorubicin for treatment of Kaposi Sarcoma.

Discussion Kaposi Sarcoma, an AIDS-defining illness, is a spindle-cell malignancy commonly associated with HHV-8 and severe immunodeficiency. Although this patient’s HIV was well controlled with anti-retroviral therapy, he subsequently developed Kaposi sarcoma without cutaneous involvement. Kaposi Sarcoma is staged based on tumor extent, immune status and systemic illness severity. Treatment modalities include continued antiretroviral therapy, intrathecal or systemic chemotherapy and radiation.

#246 HEPATITIS C TREATMENT WITH SOFOSBUVIR/VELPATASVIR INDUCING UVEITIS IN MULTIPLE SCLEROSIS
10.1136/jim-2022-SRMC.244

Introduction Sofosbuvir/velpatasvir, known as Epclusa in markets, is one of the new treatments for hepatitis C with 90% efficacy on genotype 1. Sofosbuvir acts by inhibiting a nucleotide analog that inhibits HCV NS5B polymerase as a chain terminator when incorporated into HCV RNA; velpatasvir works by blocking the NS5A protein.

Case presentation We present a 39-year-old woman with a history of untreated hepatitis C and multiple sclerosis. The patient was started on sofosbuvir/velpatasvir for her active hepatitis C genotype 1 infection. Three months later, she arrived at the ED with a reported loss of vision in her left eye. Ophthalmology team evaluation indicated left eye uveitis with increased intraocular pressure, and she was prescribed cyclo-phenolate eyedrops.

Discussion This case showcases a unique association of uveitis with sofosbuvir/velpatasvir in the setting of ongoing multiple sclerosis. Although multiple sclerosis by itself can induce uveitis, there are reports about uveitis occurrence after sofosbuvir/velpatasvir. What supports our assumption is that our patient developed the eye symptoms after starting the sofosbuvir/velpatasvir; however, another theory could propose immune-stimulation from the hepatitis C treatment can lead to a relapse of the inflammatory reaction leading to uveitis which is also strongly supportive in literature.

Conclusion Infectious disease specialists or gastroenterologists should be vigilant about the ophthalmic side effects of sofosbuvir/velpatasvir with urgent referral to ophthalmology. In our case, reactivation of multiple sclerosis might be a possibility as well.

#247 ACUTE BACTERIAL MENINGITIS SECONDARY TO STREPTOCOCCUS SALIVARIUS INFECTION WITH NO CLEAR IATROGENIC CAUSE
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10.1136/jim-2022-SRMC.245

Case Report Streptococcus salivarius is a native member of the human oral cavity and is not a typical pathogen associated with infection. In fact, it is used as a probiotic to suppress colonization and infection with more pathogenic Streptococcus species. However, it is increasingly being reported as a cause of life-threatening central nervous system (CNS) infections. A great majority of cases are iatrogenic in origin, subsequent to procedures such as spinal anesthesia and neurological surgery. Other causes include trauma-induced cerebral spinal fluid (CSF) leak and even translocation from the gastrointestinal tract. Prognosis is favorable with prompt antibiotic treatment, usually a beta-lactam antibiotic. We present a case of acute bacterial meningitis secondary to S. salivarius infection. This is a relatively rare presentation of infection with no clear iatrogenic cause.

Case A 82-year-old female with a past medical history of hypertension, osteoporosis, and gastroesophageal reflux disease (GERD) presented to the emergency department (ED) of an outside facility intubated and sedated with midazolam after she was reported to emergency medical services (EMS) for altered mental status and combative behavior. She was given intranasal and humeral intraosseous doses of midazolam for her agitation, however, due to respiratory depression she required intubation in the field. She had been experiencing a headache for 2 days, a cough for 2 weeks and altered mental status for 4 hours leading up to her initial presentation. In the ED, the patient was mechanically ventilated on minimal settings and hemodynamically stable. Initial labs showed elevated white blood cell (WBC) count of $18 \times 10^3/uL$, CT scan of the head was negative for any acute processes. Lumbar puncture was performed and findings included an opening pressure of 21 cm H2O (10–20 cm H2O), purulent fluid, WBC count of 7.3 x 10^3/uL (0–5/uL) with 95% polymorphonuclear cells, glucose of 2 mg/dL (normal range >60 mg/dL), and protein of 721 mg/dL (<45 g/dL). Gram-stain of CSF fluid showed many WBCs and no organisms. Stain of CSF fluid showed many WBCs and no organisms.}

Abstracts
and was subsequently transferred for admission to the ICU of our facility.

At our initial evaluation, the patient was intubated and sedated. On the second day of admission, 36 hours after ceftiraxone was cultured at the outside facility, Strep salivarius was grown which was sensitive to ceftriaxone. The patient continued to show improvement in mentation and ultimately received a 10-day course of ceftriaxone and piperacillin-tazobactam before being discharged with mentation at baseline, a normal WBC count, afebrile, and no other clinical or laboratory signs of infection.

Conclusion S. salivarius meningitis usually associated with iatrogenic or traumatic events, but in rare cases it can be spontaneous

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Introduction

Fungi are eukaryotic, single-celled microorganisms that are simple compared to plants and animals, but are complex compared to bacteria. Fungi have many forms, such as yeasts, molds, parasitic fungi, and pathogenic fungi. Fungi are categorized into spores, microspores, and macrospores. Fungi are known to produce a variety of secondary metabolites such as antibiotics and antifungal agents. The clinical spectrum of fungal infections varies from superficial disease to life-threatening systemic disease. A variety of fungal infections can affect the urinary tract. Prognosis is favorable with prompt antibiotic treatment, but in rare cases, it can be fatal.

Case Report

A 72-year-old male with medical history of arterial hypertension presented due to a three-day period of fever, malaise and lower extremity pain with associated chills, headache, anorexia and diarrhea. He denied chest pain, palpitations, shortness of breath or cough. Upon further questioning he worked as a farmer and had exposure to livestock and rodents. Vital sign remarkable for fever, tachycardia and hypotension despite IV fluid rehydration. Physical examination with dry oral mucosa, conjunctival suffusion, jaundice and bibasilar cracks. Laboratories with stable hemoglobin and no leukocytosis, but acute severe thrombocytopenia and bandemia. Chemistry with stage 3 non-oliguric acute kidney injury along with borderline-low sodium and potassium levels. A marked elevation of creatine kinase, lactate acid, bilirubin with direct predominance, and alkaline phosphatase were noted. Patient was started on Ceftriaxone 2 gm IV daily due to suspected leptospirosis and vasopressors. His clinical course was further complicated with de novo atrial fibrillation and a short course of renal replacement therapy. Leptospirosis PCR was later detected, and patient completed 7 days of Ceftriaxone with resolution of thrombocytopenia, bandemia, leukocytosis, hyper-bilirubinemia, transaminits and adequate spontaneous urine output. He was then transferred to PM&R inpatient rehabilitation and was discharged fully functional.

It is important to consider leptospirosis in the differential diagnosis of acute febrile illness. This case highlights the importance of a detailed history and physical examination with consideration of social aspects such as occupational exposures. Clinical diagnosis of the disease and serologic verification of infection are fundamental along with rapid initiation of antibiotics and other symptomatic therapy. It is important to be aware of the possible development of Jarisch-Herxheimer reaction in these patients. Although our patient had a severe presentation of a highly variable disease, a high index of suspicion enabled rapid identification along with correct medical management and an interdisciplinary approach resulting in a complete and functional recovery.

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#248

**WEIL’S DISEASE: A SEVERE PRESENTATION OF A VARIABLE ILLNESS**

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10.1136/jim-2022-SRMC.246

Case Report

Leptospirosis is an acute zoonotic infection with a worldwide distribution that often is under-reported. It usually affects young males due to their working or recreational activities and during the rainy season. Humans usually are incidentally infected after exposure to contaminated water, soil or animal urine. The clinical course of this disease is variable as it involves a broad spectrum of clinical manifestations. These may range from a mild influenza-like illness to a severe, potentially fatal form of multiorgan involvement called Weil’s disease that can include high fever, significant jaundice, renal failure, hepatic necrosis, pulmonary involvement, cardiovascular collapse, neurologic changes or hemorrhagic diathesis. We present a case of an elderly farmer with a severe presentation.

A 72-year-old male with medical history of arterial hypertension that presented due to a three-day trend of fever, malaise and lower extremity pain with associated chills, headache, anorexia and diarrhea. He denied chest pain, palpitations, shortness of breath or cough. Upon further questioning he worked as a farmer and had exposure to livestock and rodents. Vital sign remarkable for fever, tachycardia and hypotension despite IV fluid rehydration. Physical examination with dry oral mucosa, conjunctival suffusion, jaundice and bibasilar cracks. Laboratories with stable hemoglobin and no leukocytosis, but acute severe thrombocytopenia and bandemia. Chemistry with stage 3 non-oliguric acute kidney injury along with borderline-low sodium and potassium levels. A marked elevation of creatine kinase, lactate acid, bilirubin with direct predominance, and alkaline phosphatase were noted. Patient was started on Ceftriaxone 2 gm IV daily due to suspected leptospirosis and vasopressors. His clinical course was further complicated with de novo atrial fibrillation and a short course of renal replacement therapy. Leptospirosis PCR was later detected, and patient completed 7 days of Ceftriaxone with resolution of thrombocytopenia, bandemia, leukocytosis, hyper-bilirubinemia, transaminits and adequate spontaneous urine output. He was then transferred to PM&R inpatient rehabilitation and was discharged fully functional.

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#249

**PURPLE URINE BAG SYNDROME DUE TO ENTEROCOCCUS Faecalis**


10.1136/jim-2022-SRMC.247

Case Report

A 21-year-old man with recent history of gunshot wound to the abdomen complicated with numerous intraabdominal injuries and infections requiring percutaneous nephrostomy tube placement, presented to the hospital about 3 months later with a 3-day history of green nephrostomy drainage. He was complaining of fever, chills, headache, and non-bloody emesis. On hospital day two, his urine, urine bag, and nephrostomy tubing were dark purple. He was started on broad spectrum IV antibiotics for sepsis secondary to pyelonephritis and underwent nephrostomy tube exchange. Urinalysis from the purple urine bag contained urinary sediment with greater than 100 WBC/high-power-field and positivity for leukocyte esterase. Urine cultures yielded 50,000 CFU/mL of Stenotrophomonas maltophilia and greater than 100,000 CFU/mL Enterococcus faecalis. The patient was switched to a 14 day course of levofloxacin and amoxicillin post nephrostomy tube replacement. The patient’s urine was no longer purple in color.

Discussion Purple urine bag syndrome (PUBS) is a rare manifestation of a urinary tract infection (UTI) that is typically seen in women and chronically debilitated patients with long-term indwelling urinary catheters. There have also been reported occurrences of PUBS in patients undergoing hemodialysis and patients with nephrostomy tubes. The purple color of the urine is due to breakdown products formed by bacterial enzymes in the urine. The common bacteria capable of producing these enzymes include Providencia spp, Klebsiella, and Proteus. However, many more bacterial species have been reported in association with PUBS, including Escherichia coli, Enterococcus spp, Morganella morganii, and Pseudomonas aeruginosa. PUBS resolves by treating the underlying UTI, as well as ensuring proper care and sanitary practices for upkeep of urinary catheters. While this condition is benign, it can be distressing for patients who are unaware of this phenomenon. Physicians should recognize that purple urine bag syndrome may signal underlying recurrent UTIs due to improper urinary catheter care.

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Background Hypercalcemia is a common clinical problem, most commonly due to primary hyperparathyroidism and malignancy (~90% of reported cases). Less than 10% of cases are made up of granulomatous diseases such as sarcoidosis, fungal infections, or tuberculosis. Severe hypercalcemia is defined as >14 mg/dl and such patients commonly present with confusion, stupor or even coma. We present a case of recurrent hypercalcemia in an HIV patient caused by disseminated coccidioidomycosis that was initially suspected to be due to lymphoma.

Case presentation Patient is a 60-year-old Caucasian male with a history of HIV and recurrent hypercalcemia who was referred to the emergency room after he was found to have severe hypercalcemia on routine lab work. Patient had symptoms of polyuria, polydipsia and constipation but was alert and oriented x3 on presentation. He was started on IV fluids and given a dose of zoledronic acid on admission. His calcium levels normalized over a period of 3 days. The primary differentials for his hypercalcemia were malignancy versus an infectious process. History suggesting a paraneoplastic process included noncompliance with ART for 5 years- increasing likelihood of lymphoma, especially considering his mediastinal lymphadenopathy, numerous splenic lesions and 45 lbs weight loss in 4 months. He was empirically treated for a fungal infection ~3 months prior and had a decrease in mediastinal lymphadenopathy, suggesting an underlying infectious etiology. Additionally, Fungitell value had decreased from >500 to 299 over this time. His largest lymph node (11 mm), however, was at a hard-to-reach region. CT surgery had recommended endobronchial ultrasound done by pulmonology, but oncology assessed that the fine-needle aspiration would not be a useful study to diagnose lymphoma. We obtained an IR guided splenic biopsy and fungal studies from the specimen was positive for coccidioidomycosis.

Discussion Patient was referred for a splenectomy after his initial presentation as he was presumed to have lymphoma. Since obtaining a biopsy was challenging, a splenectomy was considered as it would serve both a diagnostic and a therapeutic purpose. Surgery should always be reserved as a final option and meticulous evaluation of reasonable differentials should also always be exhausted first. A splenic biopsy was initially considered too risky. Joint discussion with the oncologist and interventional radiologist, however, lead to the assessment that there were suitable lesions at an accessible spot, with an acceptable risk of bleeding. This collaborative management decision led to a positive outcome for this patient who was spared a life of living without a spleen and has since started appropriate treatment for coccidioidomycosis.
SOFT TISSUE MUCORMYCOSIS IN AN IMMUNOCOMPETENT PATIENT

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Case Report A 28 year-old woman without significant medical history presented to the hospital as a level 1 trauma secondary to a motor vehicle accident in which she was ejected from the vehicle. She was serially taken to the operating room for exploratory laparotomies for management of multiple intraabdominal injuries including bladder rupture, liver laceration, and pelvic fracture. She also required multiple soft tissue debridements of the abdominal wall and right buttck and was also noted to have an extensive closed soft tissue degloving injury of the flank. The patient remained intermittently febrile up to 39 °C with progressive leukocytosis up to 21,300 cells/mm³. On subsequent debridement of the flank wound, visible fluffy, white growth consistent with mold was visualized. She was empirically started on micafungin but was transitioned to isavuconazolne sulfate in the presence of a rapidly progressive transsinitis and acute kidney injury. Despite aggressive debridement, visible mold growth continued to be seen with each successive debridement, and liposomal amphotericin was added despite the potential additive nephrotoxicity and hepatotoxicity. Further operative evaluation deemed additional surgical debridement to be futile. Multi-system organ failure progressed, the patient’s family made the decision to not pursue aggressive care, and the patient passed away soon thereafter due to aysotoxic cardiopulmonary arrest. After death, her tissue fungal cultures returned with growth of Mucor species and pathology staining demonstrated invasive fungal organisms.

Mucormycetes are commonly environmental organisms and aggressive soft tissue infections have been reported in the immunocompetent, especially with this patient’s severe soft tissue injury and environmental exposure due to being ejected from her vehicle. Aggressive surgical debridement is paramount in management of this disease. For antifungals, while amphotericin B is classically considered first-line therapy, there is mounting evidence stating that isavuconazolne sulfate is non-inferior. Other studies have also demonstrated some efficacy using various combination therapies. Unfortunately, mortality remains incredibly high with this disease process despite optimal therapy. As such, this case illustrates the need to maintain high clinical suspicion to facilitate early identification and aggressive medical and surgical management of invasive mold infections.

WEST NILE VIRUS INFECTION WITH RESULTING MENINGEOENCEPHALITIS IN A MIDDLE-AGED FEMALE: A CASE STUDY

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Learning Objective Recognize the signs and symptoms of West Nile Virus Meningoencephalitis.

Case presentation A 42-year-old female with no known chronic medical illnesses presented with 5 days of fever, confusion, and generalized body aches and weakness. She became more confused and agitated in the 2 days before she presented to the ED and she complained of headache, nausea, and vomiting. Patient had been confused, wandering around, and had involuntary jerking movements affecting her upper and lower extremities. She denied chest pain, shortness of breath, cough, urinary symptoms, or diarrhea. Patient tested negative on a Covid-19 PCR test, returned to ED with confusion, and was started on empiric antibiotics with ceftriaxone and vancomycin, acyclovir for meningitis, and clonazepam and Keppra for myoclonus. Fever and leukocytosis indicated sepsis and sepsis protocol was initiated. Patient was intubated 3 days after admission to control her condition. Urinalysis was negative for significant infection. CT of head showed no acute findings, and CT of chest/abdomen/pelvis showed no evidence of pneumonia or inflammatory processes. Meningitis PCR screen came back negative. Lumbar puncture showed increased white blood cells in CSF of 65 with 43% neutrophils, 40% lymphocytes, and increased total protein. Gram stain and CSF culture were both negative. HSV PCR came back negative so acyclovir was discontinued. CSF analysis for West Nile Virus IgG was positive although the WNV IgG was negative in the blood. Subsequently both IgM samples of the CSF and blood resulted as positive. The CSF pleocytosis and elevated protein supported the diagnosis of recent West Nile Virus infection with resulting meningoencephalitis. Antibiotics were discontinued. Patient was extubated after 4 days and physical therapy, speech therapy, and tube feeding were started. The patient was discharged in stable condition with a plan for home physical therapy.

Discussion Since the West Nile Virus was first reported in the U.S. in 1999, it has become the most common cause of meningoencephalitis in the U.S. WNV can have varied presentations, ranging from asymptomatic to severe neurologic deficits (flaccid paralysis, seizures, or altered mental status) due to encephalitis or meningitis. The mortality rate for neuroinvasive WNV is approximately 9%, with that rate increasing in elderly populations. In addition, the neurological illnesses caused by WNV often result in long-term sequelae, further highlighting the need for early diagnosis and management. While current management for WNV are primarily supportive, novel treatments such as interferon therapy, ribavirin, and intravenous immunoglobulin (IVIG) are being explored and show potential.

Conclusion We conclude that although neuroinvasive WNV is rare, occurring in less than 1% of infected individuals, it should be suspected due to the severity of morbidity and mortality especially during mosquito seasons.

PULMONARY INFECTION BY A NOVEL NOCARDIA SPECIES IN A PATIENT WITH ADVANCED AIDS

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Case Report The differential diagnosis of respiratory infection in patients with human immunodeficiency virus (HIV) is noticeably broad. We present a case of necrotizing pneumonia secondary to pulmonary nocardiosis from a novel Nocardia species in a patient with advanced HIV.

A 36 year old male with untreated HIV (CD4 count of 14 and HIV viral load of 21,596) was admitted for several months of weight loss, night sweats, fatigue, and productive cough. On physical examination, he was significantly cachectic...
with a body mass index of 12. On pulmonary examination, the patient had crackles in the right upper lung field. He also had oral candidiasis and diffusely diminished strength. CT chest revealed a right upper lobe necrotizing cavitary lesion with adjacent tree in bud nodularity. MRI brain revealed diffuse cerebral and cerebellar atrophy, but no focal abnormality. Sputum cultures were collected. Patient was placed on airborne precautions and treated with empiric vancomycin, cefepime, and metronidazole. He underwent bronchoscopy for bronchoalveolar lavage (BAL) and tissue biopsy. On hospital day 9, sputum AFB cultures revealed gram positive branching filamentous bacteria, which was later identified as Nocardia niwae. BAL and lung tissue cultures also yielded the same bacterium. Empiric antibiotics were discontinued and directed therapy with IV imipenem and trimethoprim-sulfamethoxazole (TMP-SMX) was initiated. TMP-SMX was subsequently replaced with oral linezolid due to concern for acute drug-induced liver injury indicated on inpatient laboratory studies. The patient completed a 6-week course of IV imipenem and linezolid with clinical improvement and resolution of liver injury. He was transitioned to oral TMP-SMX and minocycline. Combination antiretroviral therapy (cART) was initiated as well.

Nocardia species are ubiquitous in the environment and cause pulmonary infection in those with chronic lung disease or opportunistic infection in immunocompromised host. Pulmonary nocardiosis often clinically resembles tuberculosis or atypical mycobacterial infection. Nocardia niwae, identified in our case, is a novel species associated with isolated pulmonary disease first described from taxonomic analysis of isolated human pulmonary sources in 2011. Clinicians should have high suspicion of nocardiosis in patients presenting with pulmonary infection in the setting of immunocompromise.

1-2 days, he had progressive cough and dyspnea followed by hypotension, tachycardia, and hypoxemia, at which point he was diagnosed with SARS-CoV-2. He had completed his SARS-CoV-2 vaccinations 4 months prior to hospitalization. He was started on broad spectrum antibiotics and dexamethasone, placed on high-flow oxygen, and transferred to the intensive care unit. He was diagnosed with Klebsiella pneumoniae bacteremia. He developed progressive multi-organ failure and suffered a cardiac arrest. After discussion with family, the patient was transitioned to comfort care and passed away.

Patients on immunosuppressive therapy are high risk for severe outcomes from both opportunistic infections and common infections that may affect the immunocompetent. It was critical to maintain a broad differential on this patient’s presentation, as while cryptococcal meningitis is classically a disease of advanced HIV/AIDS, it may also occur in patients with alternative causes of immunosuppression. These patients often have other features that complicate therapy, such as an inability to reduce immunosuppression to control the disease, or drug interactions between antifungals and their immunosuppressive medications.

This patient also suffered other complications from his chronic immunosuppression; a poor response to his initial SARS-CoV-2 vaccination and predisposition to more severe COVID-19 disease. Both leukopenia and diarrhea are common findings in COVID-19, which provoked the Klebsiella pneumoniae bacteremia.

This unfortunate case demonstrates the need to always remain vigilant for both opportunistic and routine infections in an immunocompromised patient, especially in the setting of an ongoing viral pandemic.
ANA titer 1:5120 in a homogenous pattern. Muscle biopsy and electromyography confirmed severe active dermatomyositis. Autoantibody workup including anti-dsDNA, anti-Scl-70, anti-SSA, anti-RNP, anti-Jo-1 were all negative. Patient was on varying doses of prednisone, with immunosuppressants methotrexate, cyclosporine and azathioprine at different time periods between 2004 and 2018. In 2007, imaging revealed soft tissue calcification in the proximal thigh, which was later confirmed to be dystrophic calcification of the dermis and subcutaneous fat via punch biopsy. In 2021, she presented with worsening calcinosis while off immunosuppressants for 3 years with normal CPK and stable clinical weakness. Several ulcerative lesions extruding calcrum were present evoking pain upon pressing flat or sitting. In view of significant morbidity, Tofacitinib was started in April 2021. Prednisone and colchicine were added 2 months later as no improvement was seen. While she now reports improvement in pain and muscle strength, the calcinotic discharge persists.

Discussion A careful review of virtually accessible literature highlights the lack of effective treatment for calcinosis cutis. Data concerning the efficacy of suggested treatment modalities is significantly insubstantial with only positive response reported in case reports. Widespread calcinosis cutis with ulcers, as seen in our patient, deters surgical management. Besides mild pain alleviation, no significant reduction in calcinosis was observed in response to Tofacitinib 4 months after initiation. Ultimately, the authors aim to shed light on the challenges that accompany dystrophic calcinosis cutis including ambiguous pathogenesis, lack of a blueprint for disease management, infection and pain control, and other psychosocial factors adversely impacting quality of life.

Case presentation A 24-year-old female presented with sudden onset weakness of proximal muscles initially around hips and later involved shoulder and arms. It was associated with generalized soreness. On physical examination there was weakness in bilateral lower extremity (LE) with 2/5 strength and upper extremity with 4/5 strength. She had knee tenderness, limited range of motion of hip and tenderness with palpation of trapezius muscles bilaterally. She had erythematous maculopapular rash on face and chest inconsistent with rash described for dermatomyositis. Laboratory testing revealed highly elevated creatine kinase (CK) >1,000 IU/L, mildly elevated ALT, AST and aldolase. Serological testing revealed a positive ANA, rest of antibody testing were negative including , anti-dsDNA, myositis specific antibodies, EBV IgM, and anti MDA-5 ab. MRI of the LE showed diffuse myositis (figure 1). Electromyography suggested diffuse myopathy associated with denervating potentials, compatible with a necrotizing myopathy. Patient was started on prednisone for 3 days during which she had improvement in pain and weakness but was held for muscle biopsy. Post biopsy patient was started on methylprednisone 125 mg BID and mycophenolate mofetil 50 mg BID. Patient’s pain improved but there was no change in muscle strength. Muscle biopsy showed no inflammatory changes and single necrotic fiber which was considered minimal nonspecific finding. Patient was CK again began to rise with >7000 and 2 rituximab infusion were given. CK down trended and patient was discharged. On follow up in 1 month patient still had muscle tenderness and developed difficulty swallowing however motor strength had improved.

Discussion This case presented with some criteria for polymyositis as defined by Bohan et al however the muscle biopsy was negative. PM has prevalence rates of approximately 1 per 100,000. Another differential diagnosis was IMNM, a type of autoimmune myopathy characterized by weakness, myofiber necrosis with minimal inflammatory infiltrate on biopsy. Treatment remains immunosuppressive therapy.
case is unique in that our patient’s EG lesions were found to derive from a less-commonly associated organism, especially for a young neonate.

**#259** OCCULT BACTEREMIA IN NEONATE WITH STAPHYLOCOCCUS AUREUS CONJUNCTIVITIS

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**Purpose of Study** Conjunctivitis in the neonatal period has several potential etiologies, of which many can result in serious morbidity or mortality. Most commonly, etiology is suspected based upon the temporality and severity of presenting symptoms. In the outpatient pediatric setting, the diagnosis of conjunctivitis is made clinically, and a self-limiting course is expected. Treatment is therefore equivocal and guided by clinical judgment, rather than discrete data. In this case, subtle findings in a neonate’s history and physical exam guided further workup resulting in the detection of occult bacteremia. This report serves to highlight the importance of a high clinical index of suspicion for systemic involvement in diagnoses evaluated in the outpatient setting.

**Methods Used** Case Report

**Summary of Results** A 13-day-old female was admitted for treatment and workup of possible gonococcal or HSV conjunctivitis after the presentation of sudden onset, rapidly progressive, bilateral, purulent conjunctivitis. Less than 24-hours prior, the patient had been healthy and without concerns at a well-baby checkup. That night, the mother reported development of left eye swelling and erythema which advanced to bilateral eye involvement with significant purulent drainage. At the time of presentation, subtle findings of new-onset poor feeding and listlessness were also detected, increasing suspicion for systemic disease involvement. Gonococcal conjunctivitis typically only presents within five days of life, but because prompt treatment is required to prevent permanent sequelae and potential blindness, rule out was pursued. Additionally, maternal risk factors were revealed as HSV infection during pregnancy, prolonged rupture of membranes, and possible chorioamnionitis. Herpes simplex virus is a less common etiology of conjunctivitis, but if systemic can be life-threatening. Upon admission, topical, oral, and intravenous antibiotic treatments were begun, and blood cultures were collected. Within 24-hours a near resolution of symptoms was achieved, and cultures revealed S. aureus conjunctivitis with concurrent S. aureus bacteremia. The neonate was managed inpatient for 10 days to complete the appropriate antibiotic course.

**Conclusions** The decision to pursue additional workup and treat with intravenous antibiotics was based on the maternal history of HSV infection and the rapid onset nature of severe ocular symptom development with poor feeding and decreased activity on examination. The detection of S. aureus bacteremia in a healthy, term newborn without a prolonged newborn hospital stay is rare. This case illustrates that signs of bacteremia may be subtle in the neonatal period, emphasizing the importance of investigation regardless of risk factors. Furthermore, it reiterates the importance of correlating physical exam findings with pertinent history to reveal a systemic condition in conjunctivitis.

**#260** ESCHERICHIA COLI- INFECTED CEPHALOHEMATOMA: A CASE REPORT

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**Introduction** Cephalohematoma is one of the common birth injuries usually associated with instrumental delivery. Most cephalohematoma spontaneously resolves on its own over the course of a few weeks. However, a small percentage of the cases can be complicated by either infection or calcification. We report a case of Escherichia coli (E. coli) infected cephalohematoma in a 5-week-old infant that was managed with surgical intervention.

**Case Report** A 37+1 weeks large for gestational age female was born to a 23-year-old diabetic mother via vaginal delivery. The mother received 3 doses of penicillin G prior to delivery for group B streptococcus (GBS). Delivery was complicated by shoulder dystocia, clavicular fracture, and left-sided parietal cephalohematoma. Apgar scores were 2 and 7 at 1 and 5 minutes. Cord gas revealed respiratory acidosis. The infant was admitted to the neonatal intensive care unit due to hypoglycemia and presumed sepsis. She was initially treated with IV ampicillin and gentamicin. The initial blood culture was negative. At 5 weeks of life, the infant was noted to have increased irritability with decreased oral feeding. Physical exam revealed an increased large, fluctuant, and non-erythematous swelling occupying the left parietal scalp. Laboratory evaluation revealed an elevated c-reactive protein of 2.3 and white cell count of 20380. IV vancomycin and gentamicin were empirically started. Blood, urine, and cerebrospinal fluid (CSF) cultures showed no growth. Magnetic resonance imaging of the brain revealed parietal cephalohematoma with no findings suggestive of intracranial extension or osteomyelitis. Neurosurgery was consulted due to the increasing size of cephalohematoma. Incision and drainage were performed, and a large amount of pus was drained. A Penrose drain was placed initially for continuous drainage which was later removed after 6 days. Wound culture grew pen sensitive E. Coli. IV cefepime was initiated and continued for 6 days. The infant improved clinically on antibiotics after the procedure and was discharged home on 4 more days of amoxicillin.

**Conclusion** Although the management for cephalohematoma is observation and monitoring, practitioners should suspect infection in case of expanding cephalohematoma size from baseline. Early diagnosis and treatment with IV antibiotics and surgical drainage can avoid potential complications.

**#261** ZOSYN INDUCED SEVERE THROMBOCYTOPENIA IN AN EXTREMELY PREMATURE NEONATE

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**Learning Objective** Identifying Zosyn-induced thrombocytopenia in a newborn.

**Case presentation** An AGA female neonate born at 23.1 weeks was admitted to the neonatal intensive care unit due to extreme prematurity, suspected sepsis, and respiratory failure. Complications at the time of delivery included preterm spontaneous, prolonged rupture of membranes for 18 hour and 15 minutes, Group B Strep (GBS), and maternal sepsis secondary
to chorioamnionitis. CBC and blood culture were obtained for the neonate and prophylactic ampicillin and gentamicin were started at birth.

On day of life (DOL) 5, blood cultures came back negative, but the infant became febrile and exhibited signs of clinical deterioration. At this time, the patient was started on 10 days of Zosyn and prophylactic fluconazole with repeat cultures pending. On DOL 6, after 2 doses of Zosyn, platelets dropped to 34,000. The decision was made to begin a 6 ml platelet transfusion bringing the platelet count to 98,000. By DOL 8, platelet counts began to trend downward. On DOL 13, CBC was reassuring except for persistent thrombocytopenia of 17,000. Another platelet transfusion was given. Zosyn continued for the full 10 days in anticipation of final cultures as the patient continued exhibiting signs suggestive of sepsis. On DOL 14, CSF analysis was suggestive of meningitis, viral panel was positive for HSV 6, and culture showed a KOH positive, rare, budding yeast. Repeat blood cultures tested positive for Staphylococcus and Candida. Pediatric Infectious Disease was consulted and recommended vancomycin to treat Staph sepsis and Amphotericin B to treat fungemia with fungal meningitis. Her infection is now well controlled, but her platelets continue to drop when she receives Zosyn. Zosyn has been continued as no other equally efficacious antibiotics are available. Thrombocytopenia is being successfully managed with platelet transfusion as necessary.

Discussion Drug-induced thrombocytopenia is a common culprit of blood dyscrasias, but it often goes unrecognized due to the difficulty in identifying the culprit drug. Thrombocytopenia is a known reaction to several antibiotics although specific reports of Zosyn-induced thrombocytopenia in neonates are rare. Our patient’s close monitoring in the NICU required frequent blood draws and allowed us to directly correlate her thrombocytopenia with Zosyn dosing. The patient’s critical status made Zosyn the preferred treatment, and platelet transfusion was used as needed to mitigate secondary thrombocytopenia.

Conclusion Although Zosyn-induced thrombocytopenia has been reported in a wide spectrum of patients, the effects of Zosyn on cytopenia induction in premature infants has yet to be described. This case outlines the importance of recognizing Zosyn-induced thrombocytopenia and in a premature infant and provides a successful example of treating the thrombocytopenia with platelet transfusion when patients are critically ill.

#262 A CASE OF FETAL METHOTREXATE SYNDROME—A RARE CAUSE OF MULTIPLE CONGENITAL ANOMALIES


10.1136/jim-2022-SRMC.260

Case Report Methotrexate (MTX) is a folate antagonist which interferes with normal DNA synthesis. MTX is used in the treatment of neoplastic and autoimmune disorders, as well as for the termination of intrauterine and ectopic pregnancies. Given its known teratogenic effects, it is rare for a fetus to be exposed to MTX. In rare instances of fetal exposure, the constellation of congenital anomalies that arises has been termed fetal methotrexate syndrome (FMS). FMS has been reported to affect nearly all organ systems, with the most common abnormalities including facial dysmorphisms, limb anomalies, cardiac lesions, cranial anomalies, CNS anomalies, and fetal growth restriction.

Case presentation Here, we report a case of a term female infant born with anomalies consistent with FMS following an unsuccessful medical abortion in the first trimester with the combination of MTX and misoprostol. The mother also consumed alcohol between the 10 and 20 weeks of gestation. At birth, the patient was noted to have several anomalies. Both feet displayed oligodactyly with only great and lateral toes present. The patient had short thumbs with anonychia and single transverse palmer creases. Facial anomalies included mild retrognathia with mandibular hypoplasia, low-set ears, and epicanthal folds. The patient was growth restricted with a birthweight < 2% for gestational age. Renal, spinal, and cranial ultrasounds as well as an echocardiogram were all within normal limits. A chromosomal microarray was normal. The patient initially had difficulty with PO feeds; however, feeding ability improved throughout admission. She was discharged home to her mother on day of life 6 having surpassed her birthweight.

The patient is followed closely by a multidisciplinary team of specialists. New diagnoses include discharge from the NICU include gross motor delay; infantile hemangioma; unilateral proptosis; and bilateral occipital mastoid craniosynostosis with mild ventriculomegaly. Orthopedic surgeries will be considered in the future once functional impairment is better understood.

#263 NOT EVERY HIP CLUNK IS A DISLOCATED HIP: A CASE OF A FEMUR FRACTURE IN A NEWBORN

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Case Report We present a case of a newborn infant with a left hip clunk noted on routine hip exam following delivery.

The patient was delivered to an 18-year-old mother, who presented to labor and delivery for a scheduled external cephalic version for breech presentation at 38 weeks gestation. During the external cephalic version, fetal heart tracing declined to 70–90 bpm which resulted in an emergency cesarean section. Physical exam following delivery revealed a significant hip clunk with passive movement of the left leg. With the associated risk of breech presentation at delivery, this was attributed to possible developmental dysplasia of the hip (DDH) and an ultrasound of the hip was ordered. However,
Finnish Type Congenital Nephrotic Syndrome
THE CONUNDRUM OF PHENIBUT WITHDRAWAL

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A rare disorder characterized by nephrotic-range proteinuria, hypoalbuminemia, and edema presenting in utero or in the first 3 months of life. Patients with CNS are at risk for complications such as hemodynamic instability, recurrent infections, thrombosis, impaired growth, and kidney failure. CNS can present with a wide clinical spectrum ranging from asymptomatic to critical illness requiring intensive treatment for severe proteinuria, anasarca, and hemodynamic compromise.

We present the case of a late preterm male infant diagnosed with Congenital Nephrotic Syndrome. He was born at 35 weeks and 3 days of gestation via vaginal delivery to a 29-year-old G2P0201 mother. There was prenatal suspicion of CNS due to placentomegaly, oligohydramnios, and a full sister with fatal complications of CNS. After birth, he was monitored in the NICU for prematurity and workup for CNS. On day of life 2, he was transferred to a Level IV NICU for multidisciplinary management including pediatric nephrology. Genetic testing confirmed the diagnosis of Finnish Type Congenital Nephrotic Syndrome with an NPHS1 gene mutation.

Following several days of an initially uneventful hospital course, he went on to develop several known complications of CNS. Many of these complications occur due to the increased urinary protein losses that result from the underlying defect in podocytes characteristic of CNS. Infants with CNS are at increased risk for thrombosis due to an imbalance of procoagulant and anticoagulant factors that result from urinary leakage of important hemostatic proteins, such as antithrombin and protein S. On day of life 4 he was diagnosed with an occlusive iliac thrombus. This was initially treated with a continuous heparin infusion, then transitioned to intermittent enoxaparin with resolution of the thrombus. By day of life 10 he had developed worsening edema and proteinuria requiring furosemide and albumin infusions. He developed hypertension requiring treatment with an ACE-inhibitor, which also helped to decrease his proteinuria. He required prolonged antibiotic treatment for multiple infections with methicillin-resistant staphylococcus aureus bacteremia, consistent with the increased risk of infections in CNS due to urinary losses of immunoglobulins. Cornerstones of his management also included optimization of fluid, calorie, and protein intake. At 3 months of life, he remains in the NICU for ongoing management of the above complications.

In terms of future management, many infants with CNS often undergo bilateral nephrectomy and begin dialysis around 6–12 months of life. They subsequently receive kidney transplant months later, once weighing 10kg. Regular life-long follow-up is required to monitor for potential acute as well as chronic complications associated with CNS and to minimize the need for hospitalization and optimize the quality of life for these children and their families.

Case Report Congenital Nephrotic Syndrome (CNS) is a rare disorder characterized by nephrotic-range proteinuria, swelling of the middle one third of the left thigh with increased discomfort with palpation and movement of the left leg. Subsequent X-rays of lower extremities revealed an oblique, acute appearing fracture extending to mid-left femoral diaphysis with displacement of fracture fragments. Orthopedic surgery fitted the patient with a Pavlik harness to stabilize the bone, with outpatient follow-up in one week. Given the severity and timing, an osteogenesis imperfecta (OI) panel and skeletal survey were performed. Skeletal survey did not reveal any other acute or healing fractures. OI panel is pending at this time. Hip ultrasound revealed possible left hip DDH, but this could be due to the femur fracture. Follow up radiograph 2 weeks later revealed healing fracture of the mid left femur with stable alignment of fracture fragments with developing osseous callus formation at fracture site.

Discussion/Conclusion This case highlights the need for a meticulous physical exam for all newborn infants including an examination of the hips. In the setting of a difficult or complicated breech delivery, there needs to be a high index of suspicion and clinical awareness to properly identify if a clunk found on passive movement of the hip is consistent with DDH or may indicate a different injury. Femur fractures are rare compared to other birth-related fractures, but they have occurred with breech vaginal and caesarian deliveries.

In conclusion, it is important that a thorough physical exam and condition of the patient is considered, and perform further investigations if warranted. The swelling of thigh and visible discomfort of patient with exam, triggered us to obtain appropriate imaging and consultation in a timely manner.

#264 FINNISH TYPE CONGENITAL NEPHROTIC SYNDROME WITH NPHS1 GENE MUTATION
A Nuttli*, J Gallois, J Farge, K Simms, M Knecht. LSUHSC-New Orleans, Metairie, LA

Abstract #265 THE CONUNDRUM OF PHENIBUT WITHDRAWAL MANAGEMENT IN A NEONATE
F Peña*, R Huq, I Roca, M Dominguez-Garcia, S Manzar. LSU Health Shreveport, Shreveport, LA

Case Report Phenybut is a neuropsychotrophic, GABaa agonist used as a dietary supplement, recreational drug, to increase...
Case Report

Trisomy 22 is a chromosomal disorder rarely associated with the survival of live-born infants secondary to severe, congenital anomalies. Most affected children die before one year of age. Typical malformations include microcephaly, congenital heart disease, and renal malformations, along with other atypical features. This case presents a complete, non-mosaic trisomy 22 male with prolonged survival to day of life 112 (four months of age). Trisomy 22 was confirmed via peripheral blood cytogenic studies showing complete, non-mosaic additional chromosome 22 in all metaphases. The patient had multiple organ malformations consistent with previously documented cases of trisomy 22, with the addition of intrahepatic cholestasis, congenital hypothyroidism, absent gallbladder, and early onset seizures. To date, only 29 liveborn cases have been reported (Kehinde et al, 2014) and none have reported liver and gallbladder disease in association with Trisomy 22.
CRANIAL ULTRASOUND: A BED SIDE DIAGNOSTIC MODALITY FOR EDWARDS SYNDROME

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10.1136/jim-2022-SRMC.266

Case Report
Case A newborn female was born at 37 weeks 6 days gestational age, at our children’s hospital with prenatal ultrasound findings of intrauterine growth restriction, two-vessel cord, and fetal echo suggestive of tetralogy of Fallot (TOF). No prenatal genetic testing was performed as parents denied. After birth, infant developed transient tachypnea of newborn without requiring supplemental oxygen. Physical exam was consistent with syndromic appearance with a flat nasal bridge, low set ears and clenched fists. Postnatal echocardiography on day of life 1 confirmed TOF with a large patent ductus arteriosus without pulmonary stenosis. On the day of life 3, the infant developed multiple cyanotic episodes associated with a blank stare. Repeat echocardiography reported no evidence of pulmonary stenosis or shunt reversal. Given the negative echocardiogram, neonatal seizures were suspected which were confirmed on electroencephalogram (EEG). The infant responded well to intravenous seizure medications with no further cyanotic episodes. Cranial ultrasound (CUS) (figure 1) showed a small vermis with a large subarachnoid space as well as decreased volume of corpus callosum, ventriculomegaly strongly suggestive of Edwards Syndrome, with similar findings on MRI. Subsequently, chromosomal karyotype confirmed our radiological diagnosis of Edwards syndrome with 47 XX +18 in all cells. The infant improved clinically and was discharged home on day of life 55.

Discussion Edwards syndrome has a well-known association with apnea and epilepsy with the prevalence of epilepsy either focal or generalized up to 65% with onset reported to be after the neonatal period. A previous review of 8 patients with Trisomy 18 with multifocal EEG abnormalities, earlier age at seizure onset and underlying structural brain malformation on CUS has been reported which is similar to our case. A review of 21 infants diagnosed with Edwards Syndrome at our institution from 1986 to 2000 had similar findings on postnatal cranial ultrasound with cerebellar hypoplasia in 20/21, corpus callosum hypoplasia in 17/21 and ventriculomegaly in 10/21 infants, who were later confirmed to have Edwards Syndrome. This case report emphasizes CUS to be an excellent bedside diagnostic modality for infants with Edwards Syndrome who have not been diagnosed prenatally.

A CASE OF EARLY-ONSET SEPSIS WITH ENTEROCOCCUS FAECLIS IN A NEONATE BORN TO A COVID-POSITIVE MOTHER

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10.1136/jim-2022-SRMC.267

Case Report We present a case of early-onset sepsis with enterococcus faecalis in a neonate born to a covid-positive mother.

36 week spontaneous vaginal delivery to a mother with late entry prenatal care. She presented with prolonged rupture of membranes of approximately 24 hours. She tested positive for COVID-19 upon admission, but was asymptomatic. At delivery, baby was noted to have foul-smelling and meconium-stained amniotic fluid increasing the risk for infection. CBC and blood culture were sent. Empiric ampicillin and gentamicin were started. The baby was placed in isolation due to COVID exposure but was found negative after 24 and 48 hours of life. At 18 hours of life the blood culture was noted to be positive for Gram positive cocci in chains, preliminarily thought to be Streptococci. Ampicillin therapy was increased to every 8 hours to cover for meningitis, and a repeat blood culture was sent. Lumbar puncture performed to rule out meningitis, revealed 30 WBCs and identification of gram-positive organisms on microscopy. The organism was identified as Enterococcus faecalis and was ampicillin sensitive. Patient completed a 10-day course of gentamicin and a 21-day course of ampicillin. The repeat blood culture showed no growth at 120 hours, a repeat lumbar puncture confirmed the infection cleared. The patient remained clinically stable and eventually discharged home.

Early onset sepsis (EOS) with enterococcus faecalis in a neonate is extremely rare. The occurrence of EOS with meningitis due to this organism in the setting of being born to a COVID positive mother has not yet been described.
Case Report We present a case of amniotic band syndrome coexisting with congenital adrenal hyperplasia (CAH).

32 week preterm neonate delivered via spontaneous vaginal delivery. Unremarkable pregnancy with normal 20 week anatomy scan. Upon delivery patient was noted to have respiratory distress syndrome which was subsequently treated with CPAP without the need for surfactant. Further examination revealed amputation of the distal 2/3 of multiple digits on bilateral hands and feet. Constrictive rings as well as residual fibrous band tissue was visualized. The patient was also noted to have ambiguous genitalia consisting of clitoromegaly with posterior labial fusion. Abdominal ultrasound was performed to visualize sex organs which revealed a uterus. Karyotype sent to confirm the sex, revealed 46, XX. A head ultrasound and echocardiogram revealed normal anatomy. As part of the work up for CAH, 17-hydroxyprogesterone levels to assess the level of enzymatic deficiency resulted at 276 mg/dl which is normal. Serial metabolic profiles were obtained since patient was at risk of developing adrenal crisis. Patient to follow with endocrinology, who will investigate for non-classical forms of CAH, and plastic surgery as outpatient. The patient continued to gain weight, improved respiratory function, and was discharged home.

Amniotic band syndrome (ABS) comprises various congenital anomalies, which include disruption, deformation, and malformations of organs that were intended to develop normally. From our extensive literature review, a case of amniotic band syndrome concurrently presenting with features suspicious for CAH has not been previously described.

Neurology and neurobiology
Joint plenary poster session and reception
4:30 PM
Thursday, February 10, 2022

Case Report A 42-year-old male with a past medical history of hypertension presents to the emergency room with a sudden ischemia leading to calcification in the region of CN VI and VII during embryogenesis. However, the literature is limited in evaluating efficacy of thymectomy as definitive treatment for secondary MG.

Abstract #270 Figure 1 Autoamputated digits of (A) R head and (B) L foot with residual fibrous bands. (C) Clitoromegaly with posterior labial fusion

Amniotic band syndrome (ABS) comprises various congenital anomalies, which include disruption, deformation, and malformations of organs that were intended to develop normally. From our extensive literature review, a case of amniotic band syndrome concurrently presenting with features suspicious for CAH has not been previously described.

Neurology and neurobiology
Joint plenary poster session and reception
4:30 PM
Thursday, February 10, 2022

#271 MYASTHENIC CRISIS AFTER THYMOMA REMOVAL IN A 60-YEAR OLD MALE

J Ciubuc*, MA Anees, EM Alhussain, J Walker, Texas Tech University Health Sciences Center, Amarillo, TX

10.1136/jim-2022-SRMC.271

Case Report A 42-year-old male with a past medical history of hypertension presents to the emergency room with a sudden ischemia leading to calcification in the region of CN VI and VII during embryogenesis. However, the literature is limited in evaluating efficacy of thymectomy as definitive treatment for secondary MG.

Abstract #270 Figure 1 Autoamputated digits of (A) R head and (B) L foot with residual fibrous bands. (C) Clitoromegaly with posterior labial fusion

Amniotic band syndrome (ABS) comprises various congenital anomalies, which include disruption, deformation, and malformations of organs that were intended to develop normally. From our extensive literature review, a case of amniotic band syndrome concurrently presenting with features suspicious for CAH has not been previously described.

Neurology and neurobiology
Joint plenary poster session and reception
4:30 PM
Thursday, February 10, 2022

#272 LATERAL MEDULLARY INFARCTION WITH HYPOPLASTIC VERTEBRAL ARTERY

J Ciubuc*, MA Anees, EM Alhussain, J Walker, Texas Tech University Health Sciences Center, Amarillo, TX

10.1136/jim-2022-SRMC.270

Case Report A 42-year-old male with a past medical history of hypertension presents to the emergency room with a sudden ischemia leading to calcification in the region of CN VI and VII during embryogenesis. However, the literature is limited in evaluating efficacy of thymectomy as definitive treatment for secondary MG.

Abstract #270 Figure 1 Autoamputated digits of (A) R head and (B) L foot with residual fibrous bands. (C) Clitoromegaly with posterior labial fusion

Amniotic band syndrome (ABS) comprises various congenital anomalies, which include disruption, deformation, and malformations of organs that were intended to develop normally. From our extensive literature review, a case of amniotic band syndrome concurrently presenting with features suspicious for CAH has not been previously described.
onset of difficulty swallowing 9 hours constant prior to ER presentation. The patient reports being unable to swallow liquids or solids. He describes having a similar episode in the past in 1998 following physical neck trauma because of alteration which was resolved within few days. On presentation, the patient was afebrile with a blood pressure of 152/116 mm Hg, a heart rate of 81 beats per minute, a respiratory rate of 18 breaths per minute, with an oxygen saturation of 95% in the emergency room. Computed tomography angiogram (CTA) of the head with intravenous contrast revealed a diminutive right vertebral artery. No other intracranial abnormalities. Magnetic resonance images (MRI) of the brain were performed with and without intravenous contrast. MRI revealed a 7 x 4 mm acute infarct of the right medulla with no associated mass effect or hemorrhage. CTA of the neck with intravenous contrast revealed a dominant left vertebral artery with a developmentally decreased right vertebral artery. The right vertebral artery revealed several areas of high-grade stenosis in the upper cervical levels above C4. Further evaluation of the patient revealed mild paresthesia on right half of his face, with loss of temperature sensation on the left side of the body. A Dobhoff nasogastric feeding tube was placed, and the patient worked with speech therapy on swallowing exercise. The patient was discharged to rehabilitation placement six days after admission. After 2 weeks patient still unable to swallow and PEG tube was placed.

Discussion Variations of vertebral artery flow are common in the general population, with approximately 75% of individuals having left or right dominant flow. Atretic vertebral arteries are uncommon, making up 2–15% of vertebral artery variations. Despite the asymmetry of vertebral vascular flow.

The patient does not have a previous history of stroke and has a past medical history notable for hypertension, which limits his stroke risk factors. Uniquely, the patient noted a similar dysphagia presentation in 1998 following physical trauma, but it is unsure if vertebral hypoplasia was a factor in that presentation.

While previous cases of young adults with WS and hypoplastic vertebral arteries have been reported, they were often associated with multiple stroke risk factors. The patient we present shows a rare relationship between vertebral artery hypoplasia and lateral medullary infarction in the presence of limited stroke risk factors. People with vertebral artery hypoplasia are usually asymptomatic but have a higher potential risk to develop lateral medullary infarction compared to people with normal vertebral artery, even in individuals with minimal stroke risk factors.

REVERSIBLE POSTERIOR LEUKOENCEPHALOPATHY (RPLS) IN THE SETTING OF AXITINIB USE FOR RENAL CELL CARCINOMA (RCC)

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10.1136/jim-2022-SRMC.271

Case Report RPLS is a clinical radiographic entity characterized by the abrupt onset of neurological symptoms with evident brain lesions. It still remains a conundrum as the lesions can involve any regions of brain not just posterior, and also, they are not always reversible. The known etiologies include hypertension, vasculopathies, vasoactive drugs and malignancy. Here, we report one such rare case presented as a drug adverse effect.

A 79-year-old well-functioning elderly Caucasian female with history of hypertension and recent diagnosis of metastatic RCC presented to us with acute onset encephalopathy. History revealed initiation of primary treatment with nivolumab and ipilimumab around 8 weeks ago and recent addition of Axitinib 10 days prior. On arrival, with a poor GCS of E2V1M2, she was intubated. Initial CT head ruled out acute emergencies like hemorrhagic stroke and cerebral edema but showed suspicious ischemic lesions. Further, MRI Brain exposed the relatively symmetric bilateral extensive cortical and subcortical increased signal on the DWI and T2/FLAIR involving frontal, parietal and occipital lobes with no reciprocal changes in ADC ruling out infarcts. With these above mentioned findings, the diagnosis of RPLS was deemed to be more likely and the treatment was started focusing on the inciting agents by controlling blood pressure and discontinuation of offending drug – Axitinib.

With the repeat MRI in 3 weeks, there were signs of resolution of few cortical lesions instilling hope for meaningful recovery. In midst of the course, we were also able to rule out possible differentials including Acute disseminated encephalomyelitis (ADEM), Multiple sclerosis (MS) and other infectious etiology with necessary CSF testing.

Our case highlights the incidence of RPLS with Axitinib use, a VEGF inhibitor used for the treatment of Renal cell carcinoma. The imaging findings were classic as mentioned above. The use of VEGF inhibitors was already linked to hypertensive crisis in literature which could be serving as the pathology behind the incidence of RPLS. Strict monitoring of blood pressure is thus advisable during the treatment with VEGF inhibitors/Axitinib.
AN UNCOMMON CAUSE OF ISCHEMIC STROKE - INTRACRANIAL INTERNAL CAROTID ARTERY DISSECTION

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Discussion
ICA dissection accounts for 2.5% of all strokes and 20% of strokes in patients under 40. Most notably, over 80% of dissection cases are due to trauma, connective tissue, or vascular disorders. Other risk factors associated with dissection include, but are not limited to, recent infection, hypertension, and smoking. Dissections result in separation between arterial wall layers creating an intramural hematoma. Enlarged thrombus formation may lead to TIA or ischemic stroke. Rupture of the hematoma may lead to subarachnoid hemorrhage. Non-contrast head CT with CTA of the head and neck is the high sensitivity imaging modality of choice. Standard approach to stroke treatment is followed for patients presenting with ischemic stroke or TIA. Antiplatelet or anticoagulation treatment is acceptable for extracranial dissection. Antiplatelet therapy and/or surgical interventions are preferred for intracranial dissections. Repeat neurovascular imaging is recommended three to six months after initial event to assess the status of dissection.

PERICARDIAL EFFUSION IN A PEDIATRIC PATIENT WITH REMOTE EXPOSURE TO COVID-19


Introduction COVID-19 infection with cardiac involvement in the pediatric population remains rare and it is most recognized for its association with Multisystem Inflammatory Syndrome in Children (MIS-C). Isolated pericarditis is a rare manifestation of COVID-19 infection, with a few cases being reported to date. Case description A 7-year-old black male presenting with chest pain and cough was found to have pericardial effusion. He had known exposure to COVID-19 five months prior, without developing symptoms of acute illness. On our evaluation, COVID-19 IgG titers were positive, SARS-CoV-2 PCR was negative, confirming prior asymptomatic infection. There was no evidence of MIS-C on laboratory analysis or on clinical examination. Pericardial fluid analysis and testing for infectious and rheumatological causes were unremarkable. Medical management with Ibuprofen, Colchicine, and Lasix initially failed and patient required pericardiotomies. Pericardial effusion later recurred and was successfully managed medically. Discussion Our patient’s case is atypical in that he developed a cardiac complication after acute asymptomatic COVID-19 infection, five months after his known exposure. Secondly, his cardiac complication was not in the context of MIS-C, which is relatively commonly described post-SARS-CoV-2 infection. COVID-19 related pericarditis presents with chest pain, pericardial rub, EKG changes. No specific biomarkers are available to diagnose pericarditis, however inflammatory markers like ESR, CRP, WBC and imaging like chest X ray, CT scan, ECHO are often utilized to diagnose and monitor response to treatment. Diagnostic pericarditis can be avoided in most cases. Pericardial fluid analysis is mainly used to exclude other causes of pericardial effusion. Cardiac specific biomarkers such as troponin-I, BNP can be used to monitor the progression of the disease and response to treatment. Main treatment options include NSAIDs, steroids, and IVIG. NSADs- Colchicine combination has been successfully used in adults and children. Anakinra was used in Colchicine non-responsive cases in adults.

Conclusion It is important to maintain a high index of suspicion for cardiac complications in children with known COVID-19 contacts. In the context of high exposure in the general population during the pandemic, the development of cough and chest pain in a pediatric patient should trigger an evaluation with a CXR, as well as EKGs and ECHO to properly investigate a cardiac complication. Such cases should be referred to Cardiology and Infectious Disease specialists for...
treatment and appropriate follow-up to resolution. Long-term Cardiology follow-up to monitor for sequelae may be warranted.

**#276** PAGET-SCROETTER SYNDROME: A RARE CAUSE OF UPPER ARM PAIN IN AN ADOLESCENT MALE

N Alammar*, M Brookman, Y Nathani. OU Health, Oklahoma City, OK

10.1136/jim-2022-SRMC.274

**Case Report** A 17-year-old male with no significant past medical history presented to the Emergency Department (ED) with progressive right upper arm and shoulder pain with swelling for two weeks. His pain was most prominent after pitching in baseball games. He also complained of numbness in his fingers with abduction of his shoulder past 90 degrees. Of note, his brother was recently diagnosed with the same diagnosis after having similar symptoms. His physical exam was significant for tense skin of the right upper arm with erythema and induration along the brachial veins. He had pain with passive extension and abduction of shoulder, however, his neurological examination was normal. In the ED, plain radiographs of the extremity and shoulder joint were normal. Duplex sonography showed increased echogenicity consistent with a deep vein thrombosis (DVT) in the right subclavian and right axillary veins. The patient was admitted for anticoagulation with heparin drip and subsequent thrombolysis catheter placement for tPA. Following successful thrombolysis the patient underwent thoracic outlet decongestion with anterior scalenectomy, first rib resection, and axillary and subclavian venoplasty. He tolerated the procedure well and had complete resolution of symptoms prior to discharge with scheduled follow up with pediatric hematology and vascular surgery services as well as physical rehabilitation regimen for return to sports.

Thoracic Outlet Syndrome is an umbrella term describing a wide spectrum of disorders characterized by the compression of the neurovascular structures as they are passing through the scalene triangle, which is compromised of two scalene muscles on each side with the first rib at the base. Paget-Schroetter Syndrome is a subtype of thoracic outlet syndrome which involves compression of the axillary-subclavian vein, resulting in a DVT. It is also known as ‘effort thrombosis’ as it is often secondary to overuse of the arm in sports (ex, baseball pitchers) which leads to hypotrophied musculature causing compression, microtrauma, and subsequent clot formation in the major vessels. This disorder affects 1–2 per 100,000 individuals yearly and is most common in young adult patients with the median age in the 30s. Although this disorder typically occurs in younger adult patients, it is also possible in the pediatric population as illustrated and is an important diagnosis to consider in a patient with unilateral upper arm and shoulder pain.

**#277** SALMONELLA ENTERICA MENINGITIS IN A HEALTHY, EXCLUSIVELY FORMULA FED NEONATE: A CASE REPORT


10.1136/jim-2022-SRMC.275

**Introduction** Salmonellosis is a global health problem typically acquired by oral route, but there are various other modes of transmission in children, including contact with another household member harboring the bacteria, consumption of infant formula, untreated water, and visit to health centers. The clinical implications of Salmonella meningitis are serious and have a potential to herald a poor prognosis, hence early diagnosis and prompt treatment is necessary to prevent morbidity and mortality.

**Case Report** 2 weeks old full term exclusively formula fed infant admitted with one day history of fever (102.6), irritability, and refusal to feed. The baby was clinically stable, and the exam was unremarkable. Investigations showed leukocytosis with left shift, elevated CRP, and CSF analysis with 5,000 white blood cells, low glucose and high proteins. He was started on Ampicillin and Gentamicin empirically at that time. CSF culture grew Salmonella enterica subspecies enterica and the antibiotics were narrowed down to Ampicillin based upon sensitivity pattern as it has good CNS penetration and is much safer in the age group. The antibiotic was continued for a total of 4 weeks after first negative CSF culture. Appropriate investigations were done to investigate the presence of complications associated with infection which were all negative except for MRI brain which showed meningitis and ventriculitis with intraventricular debris. Hearing test and encephalogram were done before discharge to rule out any hearing deficits and hydrocephalus, respectively. They were both normal. Baby continued to do well on follow-ups outpatient with normal repeat encephalogram and growth and development remained on target.

**Discussion** Invasive Salmonellosis is very rare in neonates, accounting for only a small proportion of all bacterial meningitis cases in this age group. However, if infected, the prognosis is often poor, as neonates are relatively immunodeficient owing to lack of antigenic exposure in utero. The most common Salmonella serotypes reported to be a cause of neonatal meningitis are S. typhi, S. paratyphi B, and S. Typhimurium. Salmonella meningitis is associated with many neurological complications including hydrocephalus, subdural empyema, ventriculitis, cerebral abscess, convulsive disorder, coma, and spastic paralysis. There is no definite consensus about antibiotic therapy in Salmonella meningitis, but it is well recognized that Cefotaxime and Ceftriaxone are suitable options since they have a good CNS penetration and resistance to these drugs is uncommon.

**Conclusion** Prognosis of Salmonella meningitis is very poor, especially in neonates and infants. Early diagnosis and treatment are of utmost importance to prevent progression to death and/or sequelae. It is recommended to complete a 4–5-week course of broad spectrum antibiotics to prevent recurrence. Additionally, long term assessment of development and monitoring for sequelae is important.

**#278** STATUS ASTHMATICUS: WHEN TRAUMA IS THE DISTRACTING INJURY

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10.1136/jim-2022-SRMC.276

**Background** We describe a clinically confounding case of an adolescent presenting to the pediatric emergency department with multi-system trauma who was subsequently found to be in status asthmaticus.
Abstracts

Case presentation A 14 -year-old male presented to the pediatric emergency department with concerns for multi-system trauma after an all-terrain vehicle collision. He arrived via emergency medical services from the scene with a cervical collar in place and a trauma code was activated prior to arrival. The trauma team, based on bedside assessments by emergency medicine and trauma surgery residents, observed the following during the Primary and Secondary surveys: a GCS of 14, multiple superficial abrasions, a left upper leg injury, and increased respiratory effort. Although the remainder of the trauma surveys were negative, he continued to exhibit signs of respiratory distress despite a chest radiograph with no acute cardiopulmonary process. Upon re-assessment by the pediatric emergency medicine fellow and attending, he also was found to have biphasic wheezing. His mother arrived at the same time and disclosed his history of chronic asthma as well as acute symptoms over the prior forty-eight hours. He responded well to bronchodilators and systemic steroids and then required hospitalization for management of his multi-system trauma and status asthmaticus.

Conclusions This case report illustrates two important challenges regarding pediatric trauma care. First, co-existing medical emergencies are relatively rare in pediatric trauma but do sometimes occur. Second, providing appropriate graduated autonomy during multi-disciplinary pediatric trauma activations can present unique challenges and may lead to a higher risk of cognitive errors.

RAT BITE FEVER- A RARE PRESENTATION OF FEVER AND RASH IN A TODDLER
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10.1136/jim-2022-SRMC.277

Case Report Fever and rash are common complaints in the pediatric world. Here we present a unique case of rat bite fever (RBF) in a toddler that presented to the Emergency Department (ED). A 20-month-old female presented to ED, with complaints of spiking fevers and joint pains (knee, ankles) over the previous 10–14 days. Parents also reported decreased appetite and a rash on face, hands and feet. The patient was initially diagnosed with hand-foot-mouth disease and recommended anti-pyretics and fluids as supportive care. However, persistent fever and arthralgias prompted a visit to the ED. Upon further questioning, parents reported that the patient was bit by her pet rat on right middle finger two weeks ago, which resolved with local wound care. Physical examination revealed an agitated, tachycardic and dehydrated toddler with swollen wrists, knees and ankles along with a maculopapular rash on her face, hands and feet. Laboratory evaluation was significant for elevated inflammatory markers – CRP 119, ESR 49, Procalcitonin 1.6 with the remainder of her labs and imaging, including electrocardiogram, reassuring. Patient was admitted to the inpatient service for IV Rocephin for RBF and intravenous hydration and transitioned to oral antibiotics prior to discharge home.

Rat bite fever in the United States is typically caused by Streptobacillus moniliformis, a microaerophilic gram-negative rod-shaped bacterium. Documented cases are rare and the actual incidence in unknown, given the difficulty with isolating this bacterium in culture media. The risk of RBF after a rat bite is reported to be approximately 10%, with an estimated 20,000 rat bites reported in the United States each year. The mortality rate of RBF is approximately 13% in untreated patients. S. moniliformis is commonly found in the nasal and oropharyngeal flora of rats. Transmission can result from a bite, scratch, ingestion of infected rat feces via food/water or from oral contact (such as kissing pet rats).

Once transmitted, the incubation period is usually less than seven days. Patients initially present with relapsing or intermittent fevers, muscle aches, migratory joint pains, headache and sore throat, followed by a maculopapular rash on the extremities, polyarthritis and lymphadenopathy. Complications in untreated patients can include pericarditis, myocarditis, meningitis and abscess formation. With S. moniliformis difficult to culture, diagnosis is largely clinical. Treatment includes local care of the wound and antibiotics such as penicillin, ceftriaxone, tetracycline and streptomycin.

With health care workers in emergency departments across the nation stretched thin during this pandemic, it remains vital that providers continue to listen to their patients. In conclusion, this is a unique and rare presentation of a diagnosis that is easily treatable with an accurate history of presenting illness.

#280 SUBDURAL HEMATOMA REBLEEDING AND THE CONCERN FOR ACUTE ABUSE HEAD TRAUMA
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10.1136/jim-2022-SRMC.278

Case Report Acute brain trauma may lead to liquid and clotted blood, which can form a membrane and become a chronic bleed. Chronic subdural hematomas contain friable vessels predisposing them to rebleeds. A known complication in children with abusive head trauma (AHT) with subdural hemorrhages is asymptomatic repeat bleeding into existing hematomas. When a child does show symptoms from a rebleed, the symptoms develop over days as the hematoma expands causing increased intracranial pressure and associated mass effect.

Case Description A 9-month-old male with a history of AHT was found to have progression of subdural bleeds on a routine surveillance MRI. He underwent neurosurgery for subdural drain placement and burr holes and was admitted post-operatively to the Pediatric Intensive Care Unit for monitoring. Child Abuse Pediatrics was consulted due to concerns for a new abusive event. Medical history was negative for recent trauma. Social history revealed good compliance with recommended medical care and a stable kinship foster care placement. Aside from surgical dressings his physical exam was without injury. Per the neurosurgeon’s interpretation of both the MRI and the nature of the blood evacuated during surgery, the existing subdural hematomas had progressed, indicating the bleed was not from an acute separate trauma. Physical abuse and subsequent new subdural hematoma were ruled out and a diagnosis of chronic subdural hematoma rebleed was made based on lack of clinical symptoms, normal physical exam, and the neurosurgeon’s report.

Discussion Subdural hematomas, specifically those caused by abusive injury, are challenging for clinicians due to their potential for lifelong physical sequelae and social consequences. Subdural hematoma rebleeding is well-documented in the literature and must be considered when presented with a
subdural bleed. Failure to consider rebleeding as an etiology of acute subdural hemorrhage may result in child protective services or law enforcement involvement which increases social, emotional, and psychological strains on both the child and family.

Routine imaging is part of the surveillance required for children with suspected AHT, and should be evaluated critically regarding the significance of the findings of new trauma versus a progressive rebleed. Should a child with an existing subdural hematoma present with neurological deterioration, coma, or death, their neurologic decline is likely due to new AHT.

#281 CURRARINO SYNDROME – A RARE CAUSE OF SEVERE CONSTIPATION
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Case Report This is a case of Currarino syndrome diagnosed in a child. A 1-year-old female with history of cleft palate repair and GERD presented to the Emergency Department (ED) with complaints of chronic constipation that the parent perceived as acutely worsening. She had an uneventful birth and passed meconium within first 24 hours of life. Her family had long standing constipation along with spina bifida, and a teratoma. She had failed outpatient interventions including polyethylene glycol, lactulose, and glycerin suppositories. Her review of systems was otherwise negative. On physical exam she was well appearing with mild abdominal distention and hypoactive bowel sounds. Initial abdominal x-ray was concerning for moderate dilation of the large bowel and multiple air fluid levels; however, air was present in the rectum, and patient was passing flatus. She was admitted to the hospital for clean out after unsuccessful relief of symptoms with enemas. While inpatient, her symptoms did not resolve despite an appropriate bowel regimen. A repeat abdominal plain film radiograph revealed a sacral bone defect, raising suspicion for an underlying cause for her symptoms. Subsequent CT and MRI imaging along with exploratory laparotomy confirmed Currarino’s syndrome, a triad characterized by sacral agenesis, anorectal malformation, and a presacral mass – a 2.8 cm mass consistent with a sacrococcygeal teratoma. A rectal biopsy ruled out Hirschsprung’s disease and the patient underwent a successful removal of the benign presacral teratoma, following which, she was discharged home with a bowel regimen and close outpatient follow up.

Currarino syndrome is a rare disorder with varying presentations characterized by the triad of sacral agenesis, anorectal malformation, and a presacral mass. This condition occurs in about 1 in 100,000 people, though likely underdiagnosed due to varying presentations and severity. It is an autosomal dominant hereditary condition usually involving a mutation in the MNX1 gene with significant intrafamilial variations. The condition is considered complete Currarino syndrome if all three features are present. The incomplete syndrome only represents about 20% of the cases and is usually diagnosed in the first decade of life. The incomplete form is often diagnosed in adulthood. The most common abnormality involves sacral malformations. The most common presacral masses are anterior meningoceles followed by sacrococcygeal teratomas. While symptoms of this syndrome can be subtle, there is a risk of malignant degeneration in some cases and surgery is often required. Patients often require a multidisciplinary care team consisting of gastroenterology, surgery, and neurosurgery. In patients with intractable constipation throughout childhood, further investigation with anorectal examination and pelvic x-ray is warranted.

#282 RECOGNITION OF BROWN RECLUSE SPIDER BITES
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Case Report A 4yo female presented to the ER with a lesion of concern on her right lower leg. Parents noted three small pimple like lesions one day prior to presentation. No hx of trauma, concerning exposures or known insect bites. On the morning of presentation, patient was noted to have pain, swelling and redness of the area along with a limp. Subjective fever and decrease in appetite were reported. In the ER, a large ulcerated, exudative lesion (6.5 cm) with a black necrotic center was appreciated; along with two smaller surrounding erythematous papules. US revealed a small abscess and I & D was performed. Pertinent labs were WBC~16x10^9L, CRP~18, ESR~36mm/h.

The lesion was concerning for a brown recluse spider bite due to the size and necrotic characteristics, as these spiders are common in our region. Further research enabled differentiation from other potential diagnoses. The mnemonic ‘NOT RECLUSE’ (William V Stoecker, Richard S Vetter, Jonathan A Dyer) was used to differentiate a brown recluse bite from other skin lesions.

N – Numerous (recluse bites are typically a single focal lesion)
O – Occurrence (recluse bites typically occur in secluded locations in the home such as the attic space, garage, or closet)
T – Timing (lesions from bites are less common if found between November to March)
R – Red center (recluse bites typically have a pale center)
E – Elevated (recluse bites are flat or sunken)
C – Chronic (lesions presenting longer than several weeks are unlikely to be recluse spider bites)
L – Large (lesions >10 cm are uncommon after a recluse spider bite)
U – Ulcerates too early (<7 days) suggests infection or pyoderma gangrenosum rather than a recluse spider bite
S – Swollen (except for bites to the face or feet, significant swelling is not typical for recluse spider bites)
E – Exudative (other than bites on eyelids or toes, recluse spider bites are not moist or exudative; frank pus suggests infection)

Our patient had three elevated lesions with red centers and the lower leg was swollen. The largest lesion had ulcerated within 48 hours. The largest wound was weeping and exudative. There was no history of exploring secluded areas of the house. Seven out of ten ‘NOT RECLUSE’ signs were positive, which lowers the likelihood of the lesion being from a brown recluse bite.

In our opinion, using the mnemonic ‘NOT RECLUSE’, our patient’s history and exam do not support the diagnosis of a
brown recluse spider bite. It is more likely secondary to an infection with abscess formation. The wound culture was positive for group A streptococcus.

#283 A SHOCKING DIAGNOSIS OF AUTOIMMUNE ADRENAL INSUFFICIENCY PRESENTING WITH ADRENOsis

ABSTRACT

Case Report: An 8-year-old previously healthy male presented with one week of non-bloody, non-bilious emesis, and increasing fatigue. His initial vital signs were: BP 66/29 mmHg, HR 135, Temp 97.7°F, and RR 24 with room air SaO₂ of 98%. Labs revealed blood glucose of 39 mg/dL, sodium 123 mmol/L, potassium 5.4 mmol/L, bicarbonate 12 mmol/dL, anion gap 23 mmol/dL, BUN 44, and Cr 0.9. His skin tone was darker than either of his parents, with a bronze complexion over his entire body despite reported little sun exposure. His genital exam was normal for a prepubescent male with Tanner Stage I genitalia. There is family history of congenital adrenal hyperplasia (CAH), Type 1 diabetes mellitus, and celiac disease.

Hypoglycemia was corrected and he was fluid-resuscitated with only brief vital sign improvement. Catecholamine infusions were initiated without significant improvement in hemodynamics and he was ultimately stabilized on a vasopressin infusion. Due to concern of shock secondary to adrenal crisis, he was started on stress hydrocortisone at 100 mg/m². Following this, he quickly recovered and was weaned off of all infusions. Further investigation revealed cortisol of <1 mcg/dL, ACTH 1,074 pg/mL, renin 22 ng/mL, aldosterone <1 ng/dL, positive 21-hydroxylase antibody and normal thyroid studies. He was subsequently discharged on day 4 of admission with fluidcortisone and hydrocortisone.

This report demonstrates a clinical scenario that is consistent with adrenal insufficiency presenting with adrenal crisis. The electrolyte abnormalities, hypoglycemia, hypotension, and low cortisol suggest undifferentiated adrenal insufficiency. The high ACTH level, high renin, low aldosterone, and abnormal skin tone suggest primary adrenal insufficiency. Though the family history of CAH was interesting, the presentation seemed most likely an acquired cause of adrenal insufficiency. There was no medication, infection history, or evidence of hemorrhage to support any of these as possible etiologies of adrenal failure. The family history of autoimmune disease pointed the evaluation towards Addison’s disease, and ultimately, this was supported by the positive 21-hydroxylase antibody.

Management principles highlighted in this case include the relative catecholamine and fluid resistance of the patient until stress dose hydrocortisone was delivered with resultant resolution of adrenal crisis.

This case report emphasizes that not every case of shock that presents to the pediatric ICU is sepsis and that careful evaluation for other potential etiologies is crucial. While adrenal insufficiency is a common critical care consideration, it is typically relative or functional adrenal insufficiency in the setting of some other precipitants. Acquired primary adrenal insufficiency is rare in children and autoimmune adrenal crisis presenting in shock is even less common. A high index of suspicion for primary adrenal insufficiency is imperative to deliver the life-saving steroids to treat this disease.

#284 STEROIDS AND INTESTINAL PERFORATION: NOT JUST A PRE-TERM CONCERN

ABSTRACT

Case Report: A 2-year-old male with prior episodes of wheezing requiring systemic steroids was admitted with respiratory distress in the setting of Respiratory Syncytial Virus (RSV) infection. Our patient presented on day 3 of his illness course as a transfer from an outside hospital with sudden onset increased work of breathing, decreased air movement on exam, and wheezing. He received IV magnesium sulfate, methylprednisolone, albuterol, and ipratropium bromide prior to his arrival for admission. He was admitted for continuing respiratory distress with wheezing and was placed on scheduled albuterol and systemic steroids.

He had a lengthy hospital course that progressed to respiratory failure requiring high flow nasal cannula on hospital day 3. His clinical status continued to worsen, and on hospital day 4 required intubation. Two blood cultures taken during his decompensation on day 6 resulted with streptococcus pneumoniae, and he was treated with appropriate antibiotics. He remained intubated until hospital day 10. Throughout this course, he remained on scheduled albuterol as well as systemic steroids (2 mg/kg/day). Once extubated and with sedation lessened to a taper, he was noted to have significant global muscle weakness that was diagnosed as steroid myopathy. On hospital day 11, he was noted to have abdominal distension that worsened over the next 24 hours. His enteral feeds were held, and serial abdominal x-rays obtained on hospital day 12 with concerns for pneumoperitoneum. A follow-up CT abdomen showed abdominal free air, surgical consultation was obtained, and he was taken to the OR for emergent laparotomy with which demonstrated cecal perforation.

There has been much written about the risk of steroids and intestinal perforation within the neonatal population, but intestinal perforation in the older pediatric population remains a rare phenomenon. While other cases have been reported in patients requiring chronic or extended steroid courses for rheumatologic and immunosuppressive indications, this case highlights risks associated with acute high dose steroid therapy required for treatment of conditions such as life-threatening bronchoconstriction.

#285 GAINING THE UPPER HAND: UNDERSTANDING THE CAUSES AND REPERCUSSIONS OF DELAYED PRESENTATION OF CONGENITAL HAND DEFECTS

ABSTRACT

Case Report: Congenital upper extremity anomalies are common with an incidence of 27.2 per 10,000 live births. The most common congenital hand defect is polydactyly, involving an extra digit on the ulnar (postaxial) or radial (preaxial) side.
of the hand. Following polydactyly, syndactyly has the 2nd highest incidence and affects the third web space between the long and ring fingers in over 50% of cases. Early surgical intervention of syndactyly, between 12–18 months of age, limits finger deformities from unequal growth of fused digits resulting in joint deviation. Thumb hypoplasia is the 2nd most common thumb anomaly and is treated with reconstruction versus pollicization depending on stability of the carpometacarpal joint. When indicated, pollicization should be performed prior to 1 year of age before development of oppositional pinch and should not be delayed past age 2. This case series highlights three patients with congenital hand anomalies with delayed presentation due to multiple breakdowns in referral to a pediatric hand surgeon.

Methods A retrospective review of patients with congenital hand anomalies with delayed presentation to the University of Mississippi Medical Center Congenital Hand Center was performed. Three patients were included in this case series: a 3-year-old female presenting with bilateral polydactyly of hands and feet, a 14-year-old male with bilateral syndactyly of the third web space, and a 4-year-old male presenting with bilateral thumb hypoplasia requiring staged bilateral index finger pollicization.

Results Delays in care resulted from multiple missteps. These included parents’ fear of surgical correction, lack of impact to quality of life until participation in team sports for the patient with uncorrected syndactyly, and paucity of knowledge of available surgical options by the pediatrician of the patient with bilateral hypoplastic thumbs. While all patients underwent successful reconstruction, these delays in care resulted in more demanding surgeries and prolonged return to normal hand use due to decreased cortical plasticity with advancing age.

Conclusions Early referral to pediatric hand surgery for patients with congenital hand anomalies is critical to avoid delays in care and unfavorable post-operative outcomes. Typical reconstruction timelines include polydactyly at age 3 months, syndactyly at 12–18 months of age, and reconstruction of thumb hypoplasia prior to age 12 months. Informing primary care physicians and pediatricians of available surgical interventions, ideal timelines for reconstruction, and methods to encourage parents to pursue surgical options for correctable deformities at a younger age can improve patient outcomes and lessen resultant social consequences in patients with congenital hand anomalies.

A CASE OF MULTI-SYSTEM INFLAMMATORY SYNDROME IN CHILDREN PRESENTING AS ACUTE CERVICAL LYMPHADENITIS

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Case Report Multi-system inflammatory syndrome in children (MIS-C) is a recently described clinical syndrome in children that continues to progress in its manifestations. The syndrome is associated with the novel coronavirus disease 2019 (COVID-19), and can affect any organ system in the body, leading to a wide variety of symptoms. This syndrome is often misdiagnosed in its initial presentation, and many families require multiple evaluations before finally being diagnosed and admitted for the appropriate treatment. Symptoms are caused by overwhelming inflammation and often involve the gastrointestinal, integumentary, cardiac, and hematologic systems. A high index of suspicion at the time of initial presentation should be maintained to obtain an accurate diagnosis of MIS-C.

Patient Case We report the case of a previously healthy 11-year-old male who presents with acute cervical lymphadenitis that did not respond to appropriate outpatient antibiotic therapy. He has a history of testing positive for SARS-CoV-2 via PCR, associated with mild cough and rhinorrhea, about three weeks prior to the onset of current symptoms. Upon initial presentation physical exam and laboratory results were not consistent with MIS-C, however inflammatory markers were slightly elevated which was consistent with a diagnosis of cervical lymphadenitis. Over the course of the next several days, the patient developed gastrointestinal symptoms including abdominal pain, vomiting and diarrhea. He also developed non-purulent conjunctivitis, and a generalized erythematous rash, associated with significant leukocytosis, transaminitis, and elevated coagulation markers. His electrocardiogram (EKG), and echocardiogram (ECHO) remained within normal limits despite elevated pro-BNP levels, and he later developed significant hypotension, hypoxemia, and bilateral pleural effusions requiring a short course of diuretics. The patient remained febrile despite receiving a normal saline bolus, treatment with intravenous immune globulin (IVIG), and intravenous steroids. He had ongoing symptoms, and the erythematous rash reappeared. His steroid dose was increased, and the patient had a good response in both labs, and clinical status. Leukocytosis has continued, but there is significant improvement in all other inflammatory markers, and the patient is on course to be discharged home safely.

Conclusion Many patients are unfortunately misdiagnosed after multiple evaluations before the final diagnosis of MIS-C is made. Multi-system inflammatory syndrome in children (MIS-C) may mimic other conditions such as gastroenteritis, acute appendicitis, Kawasaki Disease, sepsis, or even lymphadenitis. Clinicians should be alert to subtle signs of inflammation, such as lymphadenitis, that may progress to more classic symptoms of MIS-C such as persistent fever, abdominal pain, and a rash.
wall thickening, mesenteric lymphadenopathy, right sided pleural effusion, and small pericardial effusion. An extensive infectious and oncologic workup was sent at admission. Consults were placed for infectious disease, gastroenterology, hematology oncology, and rheumatology.

Vancomycin and Piperacillin-Tazobactam were started on the fourth day of admission due to fevers up to 41.7 degrees Celsius. Albumin was administered multiple times throughout admission due to liver failure with subsequent third-spacing of intravascular fluid.

The patient continued to clinically worsen, with ongoing abdominal pain, bloody diarrhea, and electrolyte derangements. On day seven of admission, urine histoplasma antigen returned positive, and Amphotericin B was started. The following day he developed worsening grossly bloody bowel movements, respiratory distress, and altered mental status. He was transferred to the intensive care unit where he ultimately died from hemorrhagic shock, secondary to liver failure and extensive hemorrhagic necrosis of the bowel. Autopsy confirmed the diagnosis of disseminated histoplasmosis, which was found in all organ systems.

**Discussion**

Histoplasmosis is an infection caused by inhaling spores of a fungus called *Histoplasma*; this fungus is found in soil and is common in the Ohio and Mississippi River Valleys. Infections rarely result in severe illness, except in immunosuppressed patients. Once identified, treatment should be initiated with Amphotericin B. Untreated disseminated infections have a mortality rate of >90%. Unfortunately, our patient’s infection was longstanding and severe at the time of presentation. He had no identifiable risk factors for such a severe disseminated infection and was outside an area where infections are common. According to our hospital specialists, initiating Amphotericin B as early as day one of admission would likely not have changed the outcome of this case.

**Case Description**

The patient was a 2-week-old male infant born with TAR syndrome that was admitted for concern of failure to thrive due to decreased food intake, decreased urine output, and diarrhea which was getting worse. He did not have gross blood in his stool. He was only taking 20–30 ml of formula. He was switched to extensively hydrolyzed formula by his pediatrician the day of referral which he took well initially. However, the next day he had poor PO intake and lethargy. He got worked up for sepsis and metabolic acidosis [WBC 97.5, platelets 12, bands 23, CO2 13, pH 7.27, HCO3 14.3, CRP 2.47], received IV fluids and was started on antibiotics. They were stopped after 40 hours of negative cultures. He was then switched to soy formula which he tolerated well for 9 days (his sibling with the same condition had done well on soy formula). However, he started losing weight again and developed a skin rash due to a potential soy allergy and was finally switched and discharged on Pregestamil (extensively hydrolyzed casein formula) after evidence of weight gain and resolved diarrhea. He continues to gain appropriate weight on follow up.

His birth history included prenatal diagnosis of TAR syndrome due to an affected sibling and USG. He received multiple platelet transfusions after birth and was seen on follow up by hematology where he had received platelet transfusion 3 days before admission.

**Discussion**

TAR syndrome is a rare condition that presents with absent radii with the presence of thumbs and thrombocytopenia. Usually, thrombocytopenic episodes decrease with age. However, the thrombocytopenia can be exacerbated by cow’s milk allergy. It was found that cow’s milk allergy is associated with almost 50% of patients with TAR syndrome. As in our patient, the milk protein allergy presentation is bloody, mucus-streaked stool, feeding intolerance, vomiting, weight loss. Patients may also have constipation, eczema, or irritability. It is important to TAR syndrome to remember the association with cow’s milk allergy when infants present with GI symptoms. These babies may require longer stay in the NICU before discharge to monitor formula tolerance and weight gain to ensure no dehydration or weight loss.

**Conclusion**

Patients with TAR syndrome, although rare, should closely be observed and managed for cow milk protein allergy as it is a common association.

**REFERENCES**


#289 SCURVY IN A PEDIATRIC PATIENT

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**Case Report**

Scurvy, a disease process caused by vitamin C deficiency, is characterized by follicular hyperkeratosis, perifollicular hemorrhage, ecchymoses, bleeding gums, and impaired wound healing. Other manifestations may include musculoskeletal pain, weakness, vasomotor instability, and neuropathy. Symptoms can present as early as 3 months from onset of nutritional deficiency. Most pediatric cases of scurvy occur in patients with autism spectrum disorder and restrictive diets. We present a child admitted with diffuse weakness and a severely restricted diet subsequently diagnosed with scurvy.

A 9-year-old male presented with worsening weakness for 2 months. History was notable for a limited diet beginning 2–3 months prior to presentation. Physical exam was significant for a non-verbal male, unable to walk with global weakness. A hyperpigmented, macular rash was present on his bilateral upper and lower extremities. Laboratory workup was significant for transaminitis, direct hyperbilirubinemia, moderate neutropenia, and decreased levels of vitamin D and folate. Vitamin C level was noted to be within normal limits; however, mother reported that she had been giving him a vitamin C supplement for the past week. Abdominal ultrasound revealed mild hepatic steatosis. Complete spine MRIs and plain radiographs of the lower extremities were normal. The patient was treated with vitamin supplementation, slow integration of formula-based nutrition with close monitoring of labs, speech, and physical and occupational therapies. His rash

**Abstracts**

#288 NEWBORN WITH TAR SYNDROME AND WEIGHT LOSS

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**Introduction**

Thrombocytopenia-absent radius (TAR) syndrome is a rare disorder where the radii of both arms are absent or underdeveloped in the presence of thumbs and have thrombocytopenia (<50k) which can lead to impaired clotting resulting in severe complications. We present here a baby with TAR syndrome and weight loss.

**Case Description**

The patient was a 2-week-old male infant born with TAR syndrome that was admitted for concern of failure to thrive due to decreased food intake, decreased urine output, and diarrhea which was getting worse. He did not have gross blood in his stool. He was only taking 20–30 ml of formula. He was switched to extensively hydrolyzed formula by his pediatrician the day of referral which he took well initially. However, the next day he had poor PO intake and lethargy. He got worked up for sepsis and metabolic acidosis [WBC 97.5, platelets 12, bands 23, CO2 13, pH 7.27, HCO3 14.3, CRP 2.47], received IV fluids and was started on antibiotics. They were stopped after 40 hours of negative cultures. He was then switched to soy formula which he tolerated well for 9 days (his sibling with the same condition had done well on soy formula). However, he started losing weight again and developed a skin rash due to a potential soy allergy and was finally switched and discharged on Pregestamil (extensively hydrolyzed casein formula) after evidence of weight gain and resolved diarrhea. He continues to gain appropriate weight on follow up.

His birth history included prenatal diagnosis of TAR syndrome due to an affected sibling and USG. He received multiple platelet transfusions after birth and was seen on follow up by hematology where he had received platelet transfusion 3 days before admission.

**Discussion**

TAR syndrome is a rare condition that presents with absent radii with the presence of thumbs and thrombocytopenia. Usually, thrombocytopenic episodes decrease with age. However, the thrombocytopenia can be exacerbated by cow’s milk allergy. It was found that cow’s milk allergy is associated with almost 50% of patients with TAR syndrome. As in our patient, the milk protein allergy presentation is bloody, mucus-streaked stool, feeding intolerance, vomiting, weight loss. Patients may also have constipation, eczema, or irritability. It is important in TAR syndrome to remember the association with cow’s milk allergy when infants present with GI symptoms. These babies may require longer stay in the NICU before discharge to monitor formula tolerance and weight gain to ensure no dehydration or weight loss.

**Conclusion**

Patients with TAR syndrome, although rare, should closely be observed and managed for cow milk protein allergy as it is a common association.

**REFERENCES**


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A 9-year-old male presented with worsening weakness for 2 months. History was notable for a limited diet beginning 2–3 months prior to presentation. Physical exam was significant for a non-verbal male, unable to walk with global weakness. A hyperpigmented, macular rash was present on his bilateral upper and lower extremities. Laboratory workup was significant for transaminitis, direct hyperbilirubinemia, moderate neutropenia, and decreased levels of vitamin D and folate. Vitamin C level was noted to be within normal limits; however, mother reported that she had been giving him a vitamin C supplement for the past week. Abdominal ultrasound revealed mild hepatic steatosis. Complete spine MRIs and plain radiographs of the lower extremities were normal. The patient was treated with vitamin supplementation, slow integration of formula-based nutrition with close monitoring of labs, speech, and physical and occupational therapies. His rash
resolved and he was able to walk with a walker at discharge. He was discharged home at goal caloric intake with outpatient therapy and subspecialty follow-up.

The patient’s history of severe food aversion coupled with his clinical manifestations of hyperpigmented rash and global weakness is consistent with scurvy due to malnutrition. His transaminits, ultrasound findings, and neutropenia are also likely attributable to vitamin deficiencies. Initial presentation was concerning for a neurological disorder due to progressive decline from baseline over a 2–3 month period. However, a complete work-up was reassuring from a neurological standpoint, and the weakness improved following adequate nutritional intake and vitamin supplementation.

The most common thread among pediatric patients with scurvy is a diagnosis of autism, likely attributable to restrictive diets secondary to sensory/texture aversions. This case demonstrates the importance of obtaining a full nutritional history during evaluation, especially in children with features of autism. It also helps to highlight that even in modernized countries patients can have significant nutritional deficiencies, and these patients require a multidisciplinary team approach to achieve disease remission.

#290 A RARE CASE OF INFANTILE BOTULISM

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Case Report Botulism is a life threatening disease, causing a rapidly progressive neuro-paralytic syndrome, with roughly 110 cases reported yearly in the United States. It is caused by a neurotoxin produced by the spore forming bacterium Clostridium botulinum and affects infants through ingestion of environmental dust or soil containing spores. There have also been reports from ingestion of contaminated food such as canned foods or raw honey. Infantile botulism is described as ‘floppy baby syndrome’, presenting with constipation in an afibrile infant <1 year of age, shortly followed by weakness, feeding difficulties, hypotonia, weak cry, and poor control of oral secretions. Infants generally have long, protracted courses involving respiratory insufficiency, poor feeding, and lingering weakness. Mainstay of therapy is antitoxin, which improves morbidity and mortality the earlier it is administered. Here we discuss a case of infantile botulism in a 5 month old male.

A previously healthy 5 month male initially presented to his pediatrician for constipation unresponsive to enemas or osmotic agents. Over the following days, he became progressively irritable and weak. After developing poor feeding, he was brought to an outside hospital. He received a full septic work up including a lumbar puncture and brain imaging due to concerns for sepsis and meningitis. Due to continued progressive flaccid weakness, he was transferred to our Pediatric ICU. On arrival, he had diffuse weakness of extremities and trunk, including bulbar symptoms of bilateral ptosis, weak cry, and poor control of oral secretions. Pediatric Neurology and Infectious Disease were due to concern for infantile botulism. After consulting with the Infant Botulism Treatment and Prevention Program, botulism antitoxin, ‘Baby-BIG’, was released to our institution. The antitoxin was received and administered within two days of presentation to our PICU. A stool botulinum toxin assay was collected before administering antitoxin and later resulted positive. Exposure was likely from ingestion of environmental dust or soil from the family farm. After antitoxin infusion, progression of weakness halted and slowly improved. He did not develop respiratory insufficiency or require mechanical ventilation, but did require a nasogastric tube for feeding. He was discharged home tolerating all feeds by mouth and had improvements in strength after a 23 day inpatient stay. He continues to follow up outpatient with a multidisciplinary team for impaired oropharyngeal motor skills, constipation, and feeding difficulties.

It is important to recognize the symptoms of infantile botulism and intervene with appropriate antitoxin as soon as botulism is suspected. It is a rare diagnosis that mimics other disorders of the neuromuscular junction, differentiated by subtle aspects of history and risk factors. Delayed diagnosis can lead to increased morbidity and mortality including respiratory failure and prolonged neurological deficits.
cleft with Dyna-cleft taping to approximate the edges of the cleft. He was able to be discharged home with frequent follow-up and weight checks. His first surgical intervention is planned when he is 9 months old.

Though CFC are rare, it is important for physicians to be able to identify acute and long-term complications. The best outcomes are achieved through a multidisciplinary approach, which allows for careful team discussions on timing of surgical intervention. This approach ensures adequate growth and development including oromotor skills, speech, and dental development while allowing time for facial growth to limit the total number surgeries and possible complications.

This patient had a unique presentation of primary adrenal insufficiency due to multiple factors. On further history, the patient’s mother had hypothyroidism, however there was no family history of adrenal insufficiency or known autoimmune processes. Primary adrenal insufficiency most often develops from 30 to 50 years of age, which makes this patient’s presentation interesting given her young age. The lack of family history and patient’s young age of onset further highlights the importance of evaluating organic causes of FTT in the adolescent patient.

#292 THE UNDERWEIGHT ADOLESCENT: ANOREXIA OR SOMETHING MORE?

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Case Report Most cases of failure to thrive (FTT) in pediatric patients are due to inadequate caloric intake relative to caloric output. In the case of the severely underweight adolescent, physicians often anchor on a diagnosis of anorexia nervosa, particularly when there are no other preexisting medical problems or significant family history. The following is an interesting presentation of an adolescent who presented to a pediatric emergency department (PED) with unexplained, severe FTT. This case demonstrates how avoiding anchoring and proper evaluation can unearth a longstanding undiagnosed condition.

An 18 year old female presented to a PED for 1 week of chest pain and palpitations along with 3 days of emesis. She endorsed 3 syncopal spells over the prior week, which she attributed to heat exposure at her job. She was evaluated at a local clinic who instructed her to present to the PED. Only past medical history reported was suspected hypothyroidism 2 years ago where she was placed on levothyroxine for 1 month but then told to stop taking it. On arrival to the PED, blood pressure was 95/59 and heart rate 116. Weight was 28.9 kg (<0.01%; Z = -7.51) with BMI of 11.9 kg/m² (<0.01%; Z = -8.64). She denied any binging, purging, or restricting behaviors, although a diagnosis of anorexia remained high on the differential due to her low weight and malnourishment. She denied taking any medications or any recent illness. Exam was notable for an alert, cachectic appearing female with minimal subcutaneous fat and signs of dehydration, otherwise her exam was benign. Electrocardiogram (EKG) was notable for ST segment depression in all leads and T wave inversions in the inferior leads. QTc was normal. Initial lab work-up in the PED was notable for hyponatremia, hypochloremia, hyperkalemia, uremia, and evidence of hyperthyroidism with low TSH and elevated free T4. Troponin was negative. She was admitted with Endocrinology and Cardiology consults. She was started on methimazole and atenolol while undergoing further work up. Cortisol levels were noted to be low and without any significant changes in values throughout the night and into the next morning. ACTH stimulation test performed with poor response solidifying the diagnosis of primary adrenal insufficiency. She was started on hydrocortisone and fludrocortisone. She showed improvement in symptoms and had good weight gain prior to being discharged.

Case Report A previously healthy 13-year-old female presented with painful, oral mucosal bullae filled with sanguinous fluid. She was initially (mis)diagnosed with angina bullosa haemorrhagica (ABH) and was provided symptomatic treatment. After a CBC demonstrated severe thrombocytopenia, anemia, and leukopenia, the patient was admitted for further workup including Coombs and COVID-19 PCR, which were both positive. Given a remote family history of Lupus and increasing right knee pain, further diagnostic testing was ordered. These results demonstrated a positive ANA, anti-Smith, anti-chromatin, anti-RNP, increased dsDNA and increased SM/RNP, confirming Lupus as the etiology of this patient’s presentation. A form of Blistering Systemic Lupus Erythematosus (BSLE) was likely responsible for the patient’s oral manifestations. The patient was discharged on Prednisone 30 mg twice per day after receiving 60 g IVIG and 3 days of high dose pulse corticosteroids.

Discussion This abstract outlines the case of a thirteen year-old girl with SLE with an initial presentation of blood-filled oral mucosal lesions. The patient’s COVID-19 positive status, young age, and atypical presentation added to the intricacy of her case. After presenting with blood-filled bullae in the oral cavity, the patient was initially suspected of having Angina Bullosa Haemorrhagica (ABH). ABH is a rare condition that presents with painful or painless blood-filled oral vesicles or bullae that rupture spontaneously and heal without scarring. The patient’s abnormal CBC ruled out ABH and suggested a diagnosis of Evan’s syndrome, a disorder in which cytopenias are present in two or more cell lines. Before SLE was determined to be the cause of the patient’s cytopenias, the etiology of her Evan’s syndrome was attributed to her COVID-19 positive status. Rarely, Lupus has been reported to present with vesicles and bullae in a syndrome known as BSLE. Upon an extensive review of the literature, only four articles mentioned oral bullae in a pediatric patient with SLE and not a single article mentioned hemorrhagic bullae in pediatric SLE patients.

Conclusion A deeper understanding of the variety of cutaneous manifestations of SLE is essential for disease diagnosis and management. The present study details the first ever reported case of SLE presenting with blood-filled oral bullae in a pediatric patient. Novel presentations of SLE such as this reinforce the need for a collaborative, inter-specialty approach to diagnosis and treatment of autoimmune disease. This case

#293 IDENTIFYING SYSTEMIC LUPUS ERYTHEMATOSUS PRESENTING AS HEMORRHAGIC ORAL BULLAE IN A COVID POSITIVE PEDIATRIC PATIENT

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reinforces the utility of a centralized database for recording unique autoimmune manifestations in order to aid in physicians’ diagnosis and expediency of treatment. Lastly, this case should support an increase in a clinician’s degree of suspicion for underlying autoimmune disease when dealing with unique cutaneous presentations of autoimmune diseases like SLE.

#294 DIAGNOSING SYSTEMIC LUPUS ERYTHEMATOSUS IN PEDIATRIC PATIENTS RECOVERING FROM KAWASAKI DISEASE

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Learning Objective Recognize the diagnostic clues for identifying systemic lupus erythematosus (SLE) in pediatric patients with a medical history of Kawasaki Disease.

Case presentation We present a case of a 9 year-old African American male with a past medical history of Kawasaki disease who presented with hypertension of 181/121, headache, shortness of breath, hematuria, and encephalopathy. Subsequently, the patient had a seizure with a prolonged postictal state involving frank alteration of mental status and purposeless movements in his upper extremities. Chest x-ray revealed a large right pleural effusion, from which 350cc of serous fluid was aspirated. Urinalysis revealed increased white blood cells, RBCs, and nphroitic-range protein; C2 and C4 complement levels were decreased and rheumatological panel revealed high titers of ANA as well as anti-ribonucleoprotein, anti-Smith, and anti-chromatin; and kidney biopsy revealed stage IV glomerulonephritis with greater than >50% crescents, leading to the diagnosis of SLE. The patient was discharged on a regimen of hydroxychloroquine, labetalol, mycophenolate mofetil, prednisone, and sodium bicarb and has responded well to treatment.

Discussion Kawasaki disease (KD) and systemic lupus erythematosus (SLE) are both immune mediated diseases that have widely variable presentations and symptomatology. Both diseases can present with fever, lymphadenopathy, arthritis/arthralgia, integumentary manifestations, and multi-system inflammation; however, coexistence of the two conditions has rarely been reported, and the prevalence of their association has not been documented in the literature. In this patient, initial presentation with encephalopathy, pulmonary insufficiency, and renal disease made diagnosis especially challenging. One similar case of a child who developed SLE years after having Kawasaki disease was found to be homozygous at both class I and class II MHC loci, possibly predisposing her to immunoregulatory abnormalities. This mechanism is not completely understood, but should be further examined in our patients and others who present with SLE and KD.

Conclusion A high level of clinical suspicion is necessary for diagnosing SLE or Kawasaki disease. In patients with a past medical history of either disorder, increased awareness is required to overcome confirmation bias and correctly diagnose an alternate immune-mediated disease.

#295 DECODING THE SHOCK: STOP ADDISON’S DISEASE FROM ADVANCING INTO ADRENAL CRISIS

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Case Report Recent data suggests Addison’s disease often goes unrecognized due to the nature of non-specific symptoms, until it progresses to Adrenal crisis. The crisis can also be difficult to distinguish from other causes of shock. Our case report highlights the often confusing presentation of this disease and the crisis that it precipitates.

Case Description 14 year old female, with history of abdominal pain, anorexia, weight loss, vomiting and dizziness presented from outside hospital in sepsis with hypotension, unresponsive to multiple fluid boluses. She was positive for streptococcal throat infection prior to arrival to PICU and needed complex care including pressors, intubation, multiple antibiotics and intravenous immunoglobulin infusion. She was noted to have multiple electrolyte abnormalities over the course of her PICU stay including hyponatremia and hypocalcemia, which responded to intravenous fluids and oral calcium carbonate, with normal levels of potassium and bicarbonate. She was being treated for presumed Toxic Shock Syndrome (TSS) with history of positive streptococcal infection. Over the course of her stay she also developed a rash which later began to desquamate, further pointing to TSS. She had resolution of her electrolyte imbalances, negative blood and urine cultures prior to discharge.

She presented again from gastroenterology clinic with complaints of continued abdominal pain, worsened with meals, associated with loss of appetite, weight loss, dizziness, fatigue, chest tightness, depression and vomiting. On admission there was concern for anorexia nervosa but labs on admission showed the patient to be very hyponatremic at 122 mEq with hyperkalemia at 6 mEq. Due to the degree of hyponatremia with hyperkalemia, endocrinology was consulted who recommended work up for adrenal crisis and other hormonal imbalances. Her other hormones were within normal limits but she was found to have very low cortisol level, with high ACTH. She was started on glucocorticoid and mineralocorticoid replacement. CT abdomen ruled out any adrenal infarcts, tuberculosis (TB) test was negative, aldosterone was low, renin was high and 21 Hydroxylase antibody returned positive, confirming diagnosis of autoimmune Addison’s disease. Within a day of starting treatment her sodium returned to normal level, she had more energy, with improved mood and appetite. On post hospital discharge follow up she was noted to be gaining weight with resolution of dizziness, nausea and fatigue.

Conclusion As seen in our case, the initial presentation may be confused with signs of depression, eating disorder, malignancy, other endocrinological abnormalities. If not caught timely, it can precipitate Adrenal crisis, which can be life threatening. Adrenal crisis can also be difficult to differentiate from septic shock as demonstrated in our case. Clinicians should have a high index of suspicion to catch it early and prevent patients from going into full blown crisis.
Abstracts

#296 A 9-YEAR-OLD WITH 1 WEEK OF PERIUMBILICAL ABDOMINAL PAIN
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10.1136/jim-2022-SRMC.294

Case Report A 9-year-old white male with no past medical history presents with one week of intermittent, periumbilical abdominal pain. The discomfort waxed and waned with no causality associated with meal times, time of day fever, dysuria, headache or recent travel. The location was consistently periumbilical without radiation and was characterized as ‘cramping’ in nature. He was provided a trial of over the counter laxatives at home that led to temporary improvement but with return of symptoms the following day. At initial presentation to a rural pediatric clinic, the child was happily interactive in the room allowing for a thorough abdominal examination that revealed no tenderness to even deep palpation. Family and patient were able to provide a detailed history of events but continued to deny association with medications, bowel habits, genitourinary complaints or otherwise. A broad differential was discussed with mother who began to suspect that symptoms were related to anxiety around his academic performance of late. Based on a benign examination and reassuring history, the decision was made to forgo imaging and labs but return in one week with a symptom journal to better objectively review the pattern of abdominal pain. The following day, he was asymptomatic while he participated in typical household and community activities. However two days after initial presentation, the patient began to demonstrate significantly more severe umbilical area pain. During self-examination, a cloudy fluid was expressed from the area of the umbilicus. Care was sought at an all-hours clinic where trimethoprim 160 mg with sulfamethoxazole 800 mg twice a day for 14 days was prescribed for presumed cellulitis. At PCP follow-up three days after presentation, the drainage had become more purulent and pain persisted with a more rigid, guarded abdominal examination. A CT scan with IV contrast of the abdomen and labs were ordered. Computed tomography (CT) imaging revealed a 3 cm thick-walled peripherally enhancing fluid collection deep to the umbilicus with subcutaneous tissue stranding surrounding the umbilicus consistent with a patent urachal duct cyst with subsequent infection. This case highlights the broad and variable differential required to diagnose more rare conditions that present with common complaints.

Abstract #296 Figure 1

#297 JOINT PAIN: KEEPING ALL DIFFERENTIALS IN MIND
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10.1136/jim-2022-SRMC.295

Case Report Acute lymphoblastic leukemia (ALL) results from the clonal proliferation of lymphoblasts. ALL is the most common pediatric cancer, accounting for one more than 25% of all pediatric malignancies. It primarily affects children between the ages of 1 and 5, with males being slightly more affected than females. A definitive diagnosis of ALL is made by the presence of ≥20% blasts on bone marrow biopsy. The prodromal stage of ALL may last from weeks to months and presents with nonspecific symptoms such as fever and fatigue. Infiltration of the bone marrow leads to decreased production of other cell lines, leading to anemia, bruising and bleeding, lymphadenopathy, and hepatosplenomegaly. In addition, musculoskeletal manifestations are common, and can even be the isolated presenting symptom as seen in 15–30% of ALL-associated bone pain cases. We describe such a case of ALL presenting with repeated episodes of unilateral joint pain.

Case presentation A 3-year-old female presented with left hip pain and limping on two separate occasions. The patient was afebrile with elevated CRP each time. While normal MRI and joint aspirate led to a diagnosis of transient synovitis on initial presentation, MRI on subsequent presentation was concerning for septic arthritis. Infectious workup was unremarkable, but the patient was discharged with oral antibiotics. Three months later, the patient presented for similar symptoms, now on the right. Periosteal thickening on Xray was worrisome for an infiltrative process. A CBC with elevated WBC and 57% lymphoblasts lead to the diagnosis of ALL.

Discussion Acute lymphoblastic leukemia often proceeds with an indolent course over several weeks to months, eventually leading to the classic symptoms of fever, fatigue, and bruising. ALL may also manifest as musculoskeletal signs and symptoms, including bone pain, an inability to bear weight, and the presence of joint effusions on imaging. In rare cases, as presented above, musculoskeletal complaints are the only presenting finding of ALL. Patients can have normal blood counts and the absence of physical exam findings such as hepatosplenomegaly and lymphadenopathy. Repeated visits over months for the evaluation of limb pain are common in these situations, with no definitive diagnosis being made until blasts are finally discovered on CBC.

Conclusion Due to the potential for delay in diagnosis and treatment, physicians should keep ALL high on their differential in a pediatric patient presenting with septic joint effusion. Additionally, providers should refrain from using steroids as this can mask leukemia and increase resistance.

#298 CHRONIC LUNG DISEASE FOLLOWING COVID-19 IN AN INFANT
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10.1136/jim-2022-SRMC.296

Case Report Chronic respiratory sequela are well documented in adults after COVID-19 infection, however, in young children and infants, evidence is still evolving. Here we report an infant with significant chronic respiratory complications after COVID-19.
Case Report A 10 month old female with no significant past medical history was admitted to the PICU secondary to hypoxemia, respiratory distress, and respiratory failure following COVID-19 infection in January 2021. She was also positive for Rhinovirus and Enterovirus. CXR displayed worsening bilateral alveolar infiltrates, and she developed subsequent pneumothorax requiring a chest tube. Apart from mechanical ventilation, she received supportive treatment and broad spectrum antibiotics. Cardiac echocardiogram revealed pulmonary hypertension, PFO, and PDA. Due to worsening respiratory status and hypoxemia, she received bronchodilators, inhaled nitric oxide, sildenafil, steroids, and magnesium. After 3 weeks, her respiratory status improved and she was discharged. The patient required another hospitalization in March and an ER visit in April for persistent cough and shortness of breath. After evaluation by pulmonology, she began inhaled steroids and airway clearance treatments including chest physical therapy, hypertonic saline, and bronchodilators. Further workup ruled out cystic fibrosis, primary ciliary dyskinesia, and immunodeficiency. Chest CT showed diffuse bilateral patchy airspace opacities representing atelectasis and scarring. Despite a short period of improvement, the patient was hospitalized for respiratory distress in June, where she was hypoxic and diagnosed with pneumonia. She required repeated outpatient visits to the PCP for persistent respiratory symptoms. FDA closure was performed in September. The patient continues to have persistent respiratory symptoms addressed with outpatient respiratory treatment regimen.

Conclusion As we have ruled out other underlying causes, the patient’s chronic lung disease and persistent respiratory symptoms occurred most probable secondary to COVID-19. This case report highlights the importance of monitoring respiratory symptoms in pediatric patients with severe COVID-19 infection for early identification of chronic respiratory sequelae.

Case Report Hemolytic uremic syndrome (HUS) is a thrombotic microangiopathy that affects 3/1,000 children under the age of 5 each year in the United States. HUS manifests as thrombocytopenia, microangiopathic hemolytic anemia and thrombi in acute kidney injury. While more commonly due to the verotoxin of Escherichia coli (E. coli) O157:H7, rare cases occur due to the shiga toxin produced by Shigella dysenteriae. We present the case of an older child with HUS that was diagnosed 10 days after severe gastroenteritis due to Shigella.

Case Presentation A 10-year-old male presented to the emergency department with a 3-day history of severe abdominal pain, vomiting, non-bloody diarrhea, and decreased oral intake. On physical exam, he was noted to be severely dehydrated. No rashes, pallor, or icterus were noted. Abdominal computed tomography scan showed panniculitis with normal appearing appendix. The patient due to this fact. The case presented exemplifies the importance of remembering that common conditions may have complications. In this case despite the patient being outside of the typical age range for the condition. He presented with hemolytic anemia approximately 7–10 days after onset of symptoms of gastroenteritis. Seven days after onset of symptoms, approximately 85 percent of patients will spontaneously resolve and 15 percent will develop HUS. HUS can be life threatening and present with central nervous system involvement, as well as multisystem organ failure. The hallmark of treatment is supportive care. Blood transfusions can be used to correct anemia and platelet transfusions can be performed to reduce complications of active bleeding. In our patient, platelet transfusion was not indicated due to the lack of bleeding or thrombocytopenia. Other treatment goals are correction of electrolyte abnormalities and discontinuation of nephrotoxic drugs. Antibiotics were not started before stool culture results were obtained in this patient due to this fact. The case presented exemplifies the rare case of HUS in an older child due to bacteria that is not E. coli O157:H7. Prompt follow up and supportive treatment can reduce the risk of severe complications.

#300 A CLINICAL CONUNDRUM: AN UNUSUAL CASE OF KAWASAKI DISEASE IN A BOY WITH FEVER AND UNILATERAL AXILLARY LYMPHADENOPATHY

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Case Report A 7-year-old healthy boy with a history of COVID-19 infection 10 months ago and history of recent tick
exposure presented with 6 days of intermittent fevers up to
40°C and right sided axillary lymphadenopathy. During his first
emergency room visit, labs were reportedly normal and the
patient was discharged home. The next day, his fevers contin-
ued and he developed generalized abdominal pain and emesis.
At his pediatrician’s office, labs were significant for a leukocy-
tosis. He then developed conjunctivitis and was admitted to
an outside hospital for worsening fever and emesis. There,
labs were significant for a C reactive protein (CRP) of 7.9
mg/dL and erythrocyte sedimentation rate (ESR) of 51 mm/hr.
Urinalysis had no pyuria. Tick titters were also obtained. He
was transferred to our facility for additional treatment with
concern for Kawasaki disease due persistent fevers, cervical
lymphadenopathy, lip redness, and a generalized rash.

Upon arrival to our facility, he was well-appearing. Besides
an intermittent rash with fevers, review of systems was other-
wise negative. Our initial differential diagnosis included Kaw-
saki Disease, Multisystem inflammatory syndrome due to
COVID-19 (MIS-C), tick-borne illness, or a systemic viral
infection such as adenovirus. Examination was significant for
conjunctivitis and small mobile right axillary adenopathy. Lab-
oratory studies were significant for leukocytosis (15,000/mm³),
elevated CRP (10.1 mg/dL), and elevated ESR (85 mm/hr). A
respiratory viral panel and COVID-19 serology were both
dead negative. D-dimer was elevated at 295 ng/mL. The rest of his
labs including chemistries were normal. An echocardiogram
was obtained, which was normal, and infectious disease was
consulted. He was started on empiric doxycycline due to the
history of tick exposure.

He was observed overnight and developed no further
fevers. However, due to his continued abnormal laboratory
studies and in the setting of an otherwise negative workup for
other diagnoses, we treated him for KD. He was started on
high dose aspirin and given 2 g/kg of IVIG. 24 hours after
completing IVIG, he had a fever of 38°C, so he was observed
an additional 24 hours. He was discharged home to complete
a 7-day course of doxycycline and on low dose aspirin with
plans to follow up with cardiology clinic.

Our case makes many illustrative points for the clinician.
Our patient had four of the five findings involving bilateral
conjunctivitis, oral changes (strawberry tongue/injected phar-
ynx/fissured lips), peripheral extremity changes, polymorphous
rash, and cervical lymphadenopathy. However, many of these
symptoms were absent upon arrival to our facility and his
fevers had subsided. There were also other factors such as his
age that were unusual for typical KD along with his recent
tick exposure and past COVID-19 infection that made his
diagnosis more difficult to determine. This case highlights the
importance of remembering that common conditions may have
unusual presentations.

A CASE OF INTRA-ABDOMINAL FREE AIR AND
ABDOMINAL PAIN IN AN 11-YEAR-OLD MALE WITH A
HISTORY OF CEREBRAL PALSY AND DEVELOPMENTAL
NONVERBAL DISORDER

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10.1136/jim-2022-SRMC.299

Case Report An 11-year-old male presented to the emergency
room with diffuse abdominal pain. Past medical history is
significant for cerebral palsy, ventriculoperitoneal shunt, devel-
opmental nonverbal disorder, and epilepsy. His mother attrib-
uted his pain to a dentist visit that morning. In the evening,
he was in persistent distress clenching his abdomen and
hunching over which alerted the family.

The patient had a normal bowel movement before present-
ing to the emergency room, and denied any fever, chills, vom-
ing, diarrhea, or cough. The history was limited, due to the
patient’s developmental nonverbal disorder, but his mother
reported a previous history of strabismus surgery and ventricu-
loperitoneal shunt. Patient was afebrile, tachycardic, normoten-
sive, and had moderate agitation on palpation of the
abdomen. Patient had a WBC of 12.6, an RBC of 5.38, a
hemoglobin of 14.9, a hematocrit of 42.4, a neutrophil of
88.1. A CT scan of the abdomen showed intra-abdominal free
air. Wall thickening of the sigmoid colon was apparent, sug-
gestive of an infectious or inflammatory colitis. The presence
of abdominal free air indicated perforation of a hollow organ.
After this discovery, his mother noted the patient has a habit
of putting things in his mouth.

Pediatric surgery was consulted for a diagnostic/exploratory
laparotomy to investigate a possible perforation of the sigmoid
colon. Purulent material was found in the lower abdomen, in
addition to an inflammatory reaction in the right lower quad-
rant. On examination of the distal colon, an object was
observed to be protruding out of the sigmoid colon. The deci-
dion was made to convert to laparotomy, and the bowel was
retracted superiorly which allowed the object to be completely
visualized. It was determined to be a plastic object approxi-
ately 4 inches in length by ¼ inch in width. A rectal exam
and anoscopy were normal. After an 8-day hospital stay, the
patient was discharged from the hospital and instructed to fol-
low-up in clinic in 2 to 3 weeks.

During the follow-up visit, the patient’s mother was able to
locate the remaining pieces of the foreign body in their back-
yard. The foreign body was a broken leg of a phone tripod,
and that the patient accidentally ingested the broken leg
because he had the object in his mouth and tripped on the steps
leading to their backyard. The patient made a swift
recovery.

Foreign body ingestion is a common issue in children and
causes serious complications. The most common symptoms of
foreign body ingestion are abdominal pain and vomiting. Usu-
ally, foreign bodies trapped in the lower GI tract require only
observation as outpatient, because they are excreted easily by
vias naturales, however surgical removal is indicated for com-
plicated cases, such as in the setting of a bowel obstruction or
perforation. This case demonstrates the need to consider for-
gin body ingestion in the setting of abdominal tenderness in
a nonverbal patient in the setting of an unremarkable CT
scan.

AN UNEXPECTED POTENTIALLY FATAL DIAGNOSIS IN A
CHILD WITH NEPHROTIC SYNDROME: IMAPCT OF
GENETIC TESTING

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Case Report Demonstrate the potential value of expanded use
of genetic testing in the management of children with
nephrotic syndrome. We present the case of a toddler with steroid dependent nephrotic syndrome presumed secondary to minimal change disease who was diagnosed with an unexpected rare life threatening disease on a kidney genetic testing panel.

Methods Chart review

Results A 15 month-old boy presented with anasarca, proteinuria and hypoalbuminemia. A clinical diagnosis of nephrotic syndrome due to presumed minimal change disease was made and he was started on high dose corticosteroid therapy. Family history was notable for autosomal dominant polycystic kidney disease (ADPKD) in his mother. His kidney ultrasound was negative for cystic changes. Given the family history, a kidney genetic testing panel was sent. Eight weeks later, he was in partial remission with resolved edema, and improved hypoalbuminemia. Genetic testing was found to be positive for a hemizygous missense mutation in the FOXP3 gene, associated with development of immunodysregulation, polyendocrinopathy, enteropathy, X-linked (IPEX) syndrome and regulatory T cell (Treg) dysfunction. Given the genetic test results and lack of complete remission by 8 weeks, a kidney biopsy was obtained. The biopsy was consistent with membranous nephropathy. Confirmatory FOXP3 genetic expression testing demonstrated deficient Treg population consistent with IPEX.

Conclusions The presentation and symptoms of nephrotic syndrome in this patient appeared to be most consistent with minimal change disease on initial evaluation. However, genetic testing revealed an unexpected diagnosis of IPEX. IPEX is a rare almost universally fatal autoimmune condition affecting Treg cells. It generally presents with type 1 diabetes mellitus, persistent severe diarrhea, dermatitis, and thyroiditis and often requires bone marrow transplantation. There are few case reports of kidney involvement in IPEX. The most commonly described lesion is that of membranous nephropathy. Early genetic testing in this patient, which was obtained for an unrelated indication of ADPKD family history, facilitated early diagnosis of this rare entity before development of more serious clinical manifestations. This case highlights the potential diagnostic impact of genetic testing as the technology becomes cheaper and more readily accessible.

Case Report Our patient is a previously healthy 3-year-old female who presented to the Emergency Department (ED) multiple times in December for fever, irritability, abdominal pain and decreased oral intake. Upon first presentation to the ED, she had a 5-day history of fever (Tmax 104.2) and was hospitalized for further workup. Due to her presentation during the pandemic, MIS-C was ruled out, in addition to appendicitis. Urine and blood cultures were negative. Physical exam was notable for an abscess and erythema at the base of her thumb. Hand x-ray did not show evidence of osteomyelitis or foreign body. Further infectious workup revealed positive titers for IgM and IgG mycoplasma. She was started on a 5-day course of Azithromycin and discharged home.

Two days after discharge, she returned to the ED for similar symptoms. At this time, her infectious labs and inflammatory markers were elevated and an abdominal ultrasound showed multiple splenic lesions suggestive of small abscesses. She was admitted and started on Azithromycin and Rifampin for concerns of systemic mycoplasma infection. Additional infectious serology panels were obtained throughout her admission. Due to continued daily fevers, Ceftriaxone and Vancomycin were added for additional coverage. Bartonella IgG titer was strongly positive (1:2560), and a remote history of contact with kittens was noted, making hepatosplenic cat scratch disease the top differential diagnosis. Repeat imaging after one week showed stable splenic lesions and new liver lesions. Our patient was afebrile for nine days and doing well except for continued poor appetite, so she was discharged home on Augmentin and Trimethoprim-Sulfamethoxazole. In the outpatient setting, she received serial abdominal ultrasound showing resolution of her liver and splenic abscesses.

This case is unique because our patient was immunocompetent, yet developed a rare form of Cat Scratch Disease (CSD) causing hepatosplenic abscesses and disseminated infection. Most cases of CSD result in self-limiting fever and lymphadenitis and do not require antibiotic therapy.

Abstract #302 Figure 1 Light microscopy demonstrating membranous glomerulonephropathy

#303 DISSEMINATED CAT SCRATCH DISEASE IN AN IMMUNOCOMPETENT CHILD: A RARE CASE REPORT

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10.1136/jim-2022-SRMC.301

Case Report A four year old healthy male presented to his pediatrician with four days of right-sided facial swelling. The swelling worsened significantly after bumping his head on a doorknob the day prior to presentation; he was evaluated in a local emergency department and the swelling was thought to be secondary to mild head trauma from the injury. He was noted to have decreased oral intake secondary to pain at his temporomandibular joint and was unable to fully open mouth. His exam was significant for a fleshy, poorly defined mass-like swelling in the area of his right masseter and temporalis muscles that was tender to palpation. Range of motion of temporomandibular joint was notably limited. He was referred to the emergency department for further evaluation and admitted after computed tomography and magnetic resonance imaging revealed a mass-like muscular infiltrate. A biopsy of the mass was performed and though the frozen tissue section was concerning for malignancy, final surgical pathology was consistent with a benign infiltrative intramuscular hemangioma of the infratemporal fossa.

Abstracts

A CASE OF AN INTRAMUSCULAR HEMANGIOMA OF THE MUSCLES OF MASTICATION

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10.1136/jim-2022-SRMC.302

Case Report A four year old healthy male presented to his pediatrician with four days of right-sided facial swelling. The swelling worsened significantly after bumping his head on a doorknob the day prior to presentation; he was evaluated in a local emergency department and the swelling was thought to be secondary to mild head trauma from the injury. He was noted to have decreased oral intake secondary to pain at his temporomandibular joint and was unable to fully open mouth. His exam was significant for a fleshy, poorly defined mass-like swelling in the area of his right masseter and temporalis muscles that was tender to palpation. Range of motion of temporomandibular joint was notably limited. He was referred to the emergency department for further evaluation and admitted after computed tomography and magnetic resonance imaging revealed a mass-like muscular infiltrate. A biopsy of the mass was performed and though the frozen tissue section was concerning for malignancy, final surgical pathology was consistent with a benign infiltrative intramuscular hemangioma of the infratemporal fossa.
Intramuscular hemangiomas are uncommon benign vascular tumors that commonly occur in the trunk and extremities, accounting for 0.8% of all hemangiomas. 14% of intramuscular hemangiomas occur in the head and neck region, where the muscles of mastication are most commonly affected. They are frequently missed and go untreated until adulthood due to slow growth and deep location. Most hemangiomas are congenital, though 20% can be linked to traumatic events. It is hypothesized that this patient’s hemangioma rapidly progressed after mild facial trauma was sustained. This case highlights an uncommon benign mass that pediatricians should consider in the differential diagnosis of head and neck masses despite its rarity.

Abstract #305 BACTERIAL MENINGITIS IN AN INFANT PRESENTING WITH INTRA-PARENCHYMAL HEMORRHAGE AND STATUS EPILEPTICUS

A Manchikalapati*, J Lobержe, N Toffl. The University of Alabama at Birmingham, Birmingham, AL 10.1136/jim-2022-SRMC.305

Case Report Bacterial meningitis is an important cause of morbidity and mortality in infants. Febrile infants younger than 3 months are at the highest risk. This case highlights an atypical presentation of bacterial meningitis with an uncommon pathogen in the absence of sepsis symptomatology.

A 30 day old, previously healthy, ex full term infant presented with focal seizures that secondarily generalized necessitating endotracheal intubation and intensive care unit admission. The patient did not have fever or an infectious prodrome and no history of trauma. Initial laboratory evaluation was significant for an elevated C Reactive Protein level of 34.57 mg/dL, and a Procalcitonin level of 27.82 ng/mL. She was started on anti-epileptic medications and broad spectrum antibiotics with antiviral coverage. A non-contrast computed tomography (CT) of the head (figure 1) revealed a left parietal intra-parenchymal hemorrhage concerning for an arteriovenous malformation (AVM). A lumbar puncture was temporarily deferred in the setting of an acute intracranial bleed. Infection remained on the differential and treatment was continued while additional imaging was obtained. A magnetic resonance imaging (MRI)-magnetic resonance venography (MRV) and a CT angiography of the head ruled out an AVM. A lumbar puncture on day 2 of admission revealed cerebrospinal fluid (CSF) indices as follows: protein 137 mg/dL, glucose 1 mg/dL, 625 WBC/microL with 60% polymorphonuclear leukocytes, 330 RBC/microL. CSF gram stain showed no organisms. The CSF culture resulted with Haemophilus influenzae mucoid species at 17 hours. Admission blood cultures also resulted with Haemophilus influenzae mucoid species at 36 hours.

Universal vaccination with Haemophilus influenzae Type B (Hib) conjugate vaccines has significantly decreased the incidence of invasive Haemophilus influenza disease in the United States. In addition, a hemorrhagic stroke is a rare presentation of bacterial meningitis. Invasive bacterial infection is essential to keep on a broad differential for intracranial hemorrhage in an infant. Diagnostic anchoring show be avoided, keeping treatment broad during an on-going evaluation.

At the time of this submission, the patient remains hospitalized receiving treatment for the infection.

Abstract #306 A CASE OF ADOLESCENT CHOLANGITIS CAUSED BY A NEUROFIBROMA

C McCuller*, E Landry, A Johnson. The University of Mississippi Medical Center, Jackson, MS 10.1136/jim-2022-SRMC.306

Case Report This is a case of a 15 year old white female with a past medical history of neurofibromatosis type 1 and nephrolithiasis, who presented to our emergency department for further evaluation of possible cholangitis. She initially presented to a clinic for evaluation of a 5 days of fever, right upper quadrant abdominal pain that spread to the right lower quadrant, decreased appetite, dizziness with positional change, and a one day history of jaundice. A computed tomography scan of the abdomen and pelvis was read as concerning for either cholangitis or lymphoma. ‘Confluent abnormal density in a perportal location within the porta hepatitis region, extending into the liver self. Differential diagnosis includes lymphoma or infiltrate neoplasm, atypical cholangitis, and Caroli disease’. Ultrasound showed minimal sludge in the gallbladder with mild wall thickening and intrahepatic biliary dilatation with thickened walls and central debris. On initial evaluation in the emergency department, she was hemodynamically stable with exam concerning for multisystem inflammatory syndrome in children. Noted to have elevated erythrocyte sedimentation rate and C-reactive protein, 20.9 and 120, respectively; elevated liver function tests: Alkaline phosphatase of 150, aspartate transaminase of 53, and alanine transaminase of 142; lactate dehydrogenase of 453, white blood cell count of 50. Total bilirubin was 0.75, all indirect. Pediatric surgery was consulted and concerned for cholangitis. Pediatric gastroenterology recommended treatment with vancomycin and Zosyn for suspected sepsis. Following initiation of antibiotics, the patient became hypotensive and was admitted to Pediatric Intensive Care Unit.

Following admission, chart review showed the patient had a known hepatic lesion, most likely a plexiform neurofibroma, located at the porta hepatitis with periportal extension. Repeat CT obtained on hospital day 1 again demonstrated this known mass. MRI of the abdomen obtained on hospital day 2.
confirmed the mass diagnosis. Hepatobiliary surgery team was consulted and recommended hepatobiliary iminodiacetic acid (HIDA) scan. HIDA was performed on hospital day 5 and did not demonstrate any findings of current cholangitis. Antibiotics were de-escalated to oral antibiotics and she was discharged on hospital day eight.

**Discussion** Although there was no evidence of acute cholangitis on hepatobiliary iminodiacetic acid (HIDA) scan, according to the Tokyo Guidelines for diagnosis of acute cholangitis set out by Yasuda, et al, this patient initially met criteria for diagnosis of acute cholangitis. Most cases of acute cholangitis in pediatric populations are found in the postoperative period following correction of biliary atresia or are a result of pancreatobiliary maljunction.

**REFERENCES**


**Abstract #307**

**A CASE OF DIRECT HYPERBILIRUBINEMIA IN THE SETTING OF MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN WITH INCIDENTAL GALLBLADDER AGENESIS**


10.1136/jim-2022-SRMC.305

**Case Report** In April 2020, cases of multisystem inflammatory syndrome in children (MIS-C) were reported from the UK as clinical presentations similar to incomplete Kawasaki and toxic shock syndrome in the setting of COVID-19. MIS-C is a rare but significant complication of COVID-19. We present the case of direct hyperbilirubinemia associated with MIS-C with incidentally discovered gallbladder agenesis.

**Case presentation** A 16-year-old male presented with fever, epigastric pain, jaundice, and rash. He tested positive for SARS-CoV-2 one month prior, improved clinically, but developed fever one day before presentation. Physical exam revealed a diffuse maculopapular rash, jaundice, and right upper quadrant tenderness. Vitally stable.

Work up for MIS-C revealed positive SARS-CoV-2, lymphopenia, ESR 23 mm/hr, fibrinogen 552 mg/dl, CRP 8.94 mg/dL. Troponin, BNP, and coagulation profile were normal. Echo and CXR were unremarkable, CMP showed ALT 242 IU/L, AST 145 IU/L, total bilirubin of 5.7 mg/dL with direct bilirubin of 3.9 mg/dL, GGT 178 IU/L, consistent with obstructive jaundice. Workup for autoimmune hepatitis and viral hepatitis was negative. US right upper quadrant was done to rule out an obstructive pathology, which was normal except that it showed an absent gallbladder. MRCP and HIDA scan also showed no obstructive pathology and confirmed gallbladder agenesis.

With no clear reason for direct hyperbilirubinemia, treatment for mild MIS-C was initiated with IV dexamethasone. Repeat blood work after 24 hours showed down trending bilirubin levels and stable liver enzymes, patient was discharged shortly afterwards. At one month follow up, liver enzymes and bilirubin normalized.

**Discussion** Presentations of MIS-C vary with the most common being persistent fever along with gastrointestinal, respiratory, neurological, skin, and/or cardiac involvement. Acute hepatitis with elevated liver enzymes is a well-documented lab finding but direct hyperbilirubinemia is rare. Another interesting finding in our case was gallbladder agenesis, which is a rare congenital anomaly (incidence 10–65 per 100,000).

**Conclusion** We highlight in our case report that cholestatic jaundice, despite being a very rare manifestation of MIS-C, can still occur. A multidisciplinary approach should be taken when treating such patients including GI, cardiology, rheumatology, and infectious disease.

**Abstract #308**

**LYMPHADENITIS AS A PRESENTING SYMPTOM IN MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN**

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**Case Report** We present a case of a 4-year-old male who presented to the ED for persistent fever associated with abdominal pain, diarrhea and new onset of left neck swelling. The patient was reported to have URI symptoms 3 weeks prior to his presentation along with intermittent fever that was not resolving. He was taken to urgent care for his persistent fever and neck swelling for which he was prescribed Augmentin that did not seem to improve the patient’s condition despite adherence. Upon presentation to our ED 3 days later, the patient was found to be febrile to 39.5°C with tachycardia, vital signs were otherwise normal. On physical exam, mild abdominal distension was appreciated and multiple large lymph nodes were palpable in the left cervical chain. A CT of the neck with contrast revealed pharyngitis with left cervical chain reactive lymphadenopathy. He was admitted for management of cervical lymphadenitis via IV antibiotic therapy as well as to ensure adequate hydration. Despite IV antibiotics there was little improvement in his clinical status. Due to the patient’s history of URI symptoms with fever that had reappeared within the previous few days, a COVID IgG was obtained to rule out multisystem inflammatory syndrome in children (MIS-C), which came back positive. SARS-CoV-2 by RT-PCR was negative. MIS-C labs were obtained that revealed anemia, elevated fibrinogen to 470 mg/dL, D-dimer 2.61 mg/mL, CRP 7 mg/dL, ESR 53 mm/hr, BNP 200 pg/mL, absolute lymphocyte count of 730/mcl, PTT 40.6 seconds and troponin 0.104 ng/mL. Echocardiogram was unremarkable. Treatment was then modified to IVIG and steroids, as...
he met criteria for MIS-C. Upon initiation of IVIG, the patient's fever as well as lymphadenopathy started resolving and the patient continued to improve clinically.

**Discussion** MIS-C is a rare complication of COVID-19 but it can be devastating. This case highlights the importance of considering MIS-C in patients who present with nonspecific symptoms with a suggestive history of previous COVID-19 infection. It is also important to recognize that isolated lymphadenitis could be a manifestation of MIS-C especially if it is not responding to appropriate antibiotic therapy.

**Conclusion** It is important to have a high index of suspicion for MIS-C in a child who has a history of COVID-19 as timely treatment with IVIG and steroids can help decrease the deleterious effects especially on the heart.

**#309 HYPOOTHERMIA AND HYPOGLYCEMIA IN A SEVERELY MALNOURISHED MALE**

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Case Report Congenital central hypothyroidism in pediatrics is typically diagnosed through routine newborn screening. Increased screening has led to timely therapy and improved developmental outcomes. However, there can be false-negative testing in premature and/or low-birth-weight infants and should not definitively exclude this diagnosis later in life if signs and symptoms arise.

Case presentation A 12-month-old male born at 33 weeks presents with feeding intolerance. His past medical history is significant for cleft lip and palate with a repair of the cleft lip one month prior, dysphagia with gastrostomy tube dependence, and chronic failure to thrive. Upon arrival, he was found to be hypothermic, bradycardic, and hypotensive. Exam was notable for a severely malnourished (z-score of -6.2), non-verbal male with low-set ears, wide-set eyes, and global developmental delay, who was unable to sit unsupported or pull to a standing position. Initial labs showed metabolic acidosis, hypoglycemia, and elevated transaminases. Further work-up was initiated after the patient was stabilized. Genetic studies, including amino acid profile and chromosomal microarray, as well as cosynotropin tests were unrevealing. Given oral and maxillofacial abnormalities, MRI of the brain with pituitary cuts were obtained and negative for midline defects. Free T4 by direct analysis was low while TSH was appropriately normal, findings consistent with central hypothyroidism. Previously performed thyroid studies were within normal limits. Additionally, growth hormone (GH) studies showed normal IGF-1 but low IGFBP-3, raising suspicion but was indeterminate for concomitant GH deficiency. The patient was subsequently started on levothyroxine with marked improvement. He started smiling, became more interactive, gained more truncal control, and demonstrated improved weight gain. After feeds were advanced slowly and electrolytes normalized, the patient was discharged home with endocrine follow-up and consideration for GH therapy.

**Discussion** Hypothyroidism can be a life-threatening medical condition. Patients with oral and maxillofacial defects may warrant head and neck imaging and extensive investigation to rule out other endocrine disorders. In this case, our patient developed symptoms after surgery for his cleft lip repair. We hypothesize that this could have been the triggering event. Cortisol is known to be elevated during times of stress and acute illnesses, which can then increase thyroid binding globulin and result in reduced free thyroid hormone that is available to our cells. Premature infants can have a delayed elevation in TSH that can result in an ‘atypical’ presentation of hypothyroidism. Therefore, clinicians should have a low threshold for repeat screening. Prompt diagnosis and treatment are needed as developmental delays, delayed osseous maturation, and growth deficits can develop and lead to irreversible intellectual disability.

**#310 AN UNUSUAL CASE OF ACUTE THYROTOXICOSIS ASSOCIATED WITH MOYAMOYA SYNDROME IN A CHILD**

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**Purpose of Study** Moyamoya syndrome (MMS) is a rare cerebrovascular disorder marked by chronic, gradual stenosis of arteries around the circle of Willis with characteristic collateral vessel formation. It can be associated with thyrotoxicosis and Graves’ Disease. To date, there are few case reports in the literature of this phenomenon occurring in young children. We highlight a unique case of MMS that was discovered during stroke workup of a patient with acute thyrotoxicosis.

**Case** A 5-year-old male with past medical history of vitiligo, developmental delay, aspiration events, and epilepsy was admitted to the hospital medicine service with concern for pneumonia in the setting of cough, congestion, and fever for one week. The patient was started on ceftriaxone and azithromycin for community acquired pneumonia. Nasopharyngeal viral respiratory panel was positive for parainfluenza. After lack of improvement, the differential diagnosis was broadened and further workup revealed decreased thyroid stimulating hormone (TSH), elevated free T4, and positivity for both thyroid peroxidase (TPO) antibodies and Thyroid-Stimulating Immunoglobulin (TSI), confirming the diagnosis of autoimmune thyroiditis. Propylthiouracil and propylthiouracil were initiated for thyrotoxicosis, with improvement of his tachycardia. On day two of hospitalization, he developed episodes of decreased responsiveness. On hospital day 6, he developed left upper extremity weakness. Brain magnetic resonance imaging (MRI) without contrast showed extensive regions of cortical loss, white matter encephalomalacia, and bilateral regions of diffusion restriction, concerning for ischemic changes. The differing ages of the MRI lesions prompted a head and neck computed tomography angiography (CTA), which revealed narrow cerebrovascular segments. These vascular changes were consistent with severe bilateral MMS. The patient was started on aspirin and underwent right-sided revascularization surgery and cephaloduroarteriosynangiosis with pial synangiosis. Left-sided revascularization was performed one month later. On most recent outpatient follow-up, he had improvement in left-sided hemiparesis with improved gait stability, although not complete return to baseline.

**Conclusions** This case highlights a young patient diagnosed with MMS in the setting of active Graves’ thyrotoxicosis. While this association is well described in the literature, his
young age, developmental delay, and history of seizures posed a unique challenge to the diagnosis. This case emphasizes the importance of careful serial neurological exams in the setting of thyrotoxicosis to evaluate for any developmental or neurological changes to suggest concurrent MMS. If identified, CTA should be considered, as timely revascularization may prevent further progression of disease.

**#311 PASSAGE OF A WORM IN STOOL OF A GENERAL PEDIATRICS CLINIC PATIENT**

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**Purpose** Abdominal pain is one of the most common chief complaints for which patients present to their general pediatrician’s office. Careful history, physical exam, and laboratory testing must be used in order to distinguish organic versus functional abdominal pain. When a patient presents to clinic with a chief complaint of passing a long roundworm in her stool, the diagnosis becomes simpler than her previous months of reported abdominal pain first appeared.

**Methods** Retrospective chart review.

**Results** A previously healthy 14 year old female presented to continuity clinic for a well-child visit. She reported occasional abdominal pain with intermittent loose stools for the past few months. She also reported passing stool that contained a single roundworm the previous night, which had never previously occurred. Patient brought the worm in with her for this visit. She denied any other symptoms on review of systems. However, she had recently started gardening. She had been seen in gastroenterology clinic 9 months prior for abdominal pain and loose stools, but all lab testing was normal including labs to rule out Celiac disease and inflammation. GI bacterial panel of the stool was incidentally positive for Enterococcus aggregatiae E. coli. She was diagnosed with likely Irritable Bowel Syndrome with Diarrhea (IBS-D) exacerbated by reported history of anxiety and was started on Amitriptyline and was taught anxiety coping techniques such as deep breathing and distractions.

Vitals, physical exam, and weight were normal for her age at her well-child visit. Worm was visualized during this general pediatrics visit as a thin, brown worm measuring over 20 cm long. She was prescribed Mebendazole; however, medication was not covered by patient’s insurance and was too expensive for the family to afford. Ivermectin was then prescribed. On follow up phone call, patient’s mother reported that following medication, this patient has had relief of abdominal pain and loose stools and that she has not had any recurrent episodes of worms in stool.

**Conclusions** This case demonstrates the importance of taking a detailed history and physical exam on a patient with a chief complaint that conjures a very broad list of differential diagnoses. While psychologic symptoms is on a differential as a cause for abdominal pain, this patient’s case demonstrates an organic cause of parasitic infection that could have been diagnosed and treated up to 9 months before she passed a worm in her stool. Another important takeaway from this case presentation is to keep in mind a patient’s ability to access the care and resources that their healthcare provider is attempting to provide them, such as expensive medications.
consulted and determined not enough drainable fluid. She was treated with IV clindamycin and ceftriaxone with improvement in erythema and discharged home on PO clindamycin and cefdinir.

Fifteen days after discharge, patient presented due to worsening erythema and swelling at left inguinal lymph nodes. Mom denied any fevers, chills, weight loss or other systemic symptoms. Mother did report that patient had trouble tolerating the clindamycin and did not take all doses as prescribed. On exam, patient appeared clinically well, in no acute distress but did have erythema and swelling at the left inguinal region with mild tenderness to palpation. No other lymphadenopathy noted on exam. Repeat left inguinal ultrasound showed an interval increase in size of lymph node tissue with necrosis now expanding out of lymph node capsule. No area of fluctuance or fluid demonstrated. Patient was readmitted and started on IV vancomycin. Blood cultures, CBC, LDH, uric acid and inflammatory markers remained negative. Patient received 5 days of antibiotics without improvement in swelling. At that time, Pediatric Surgery consulted for biopsy of left inguinal nodes. Following biopsy, patient transitioned to TMP/SMX while awaiting preliminary pathology results.

Preliminary pathology report was concerning for a malignant process. Hematology/oncology consulted at this time who recommended to obtain chest, abdomen and pelvic CT with contrast. CT showed multiple enlarged lymph node sites in the pelvic region. Patient discharged home on TMP/SMX to complete 14-day course with close follow-up in both the pediatric and hematology clinics. Final pathology showed diffuse large B-cell lymphoma. Patient subsequently readmitted for further workup and initiation of chemotherapy.

Lymphadenitis is a common diagnosis seen in children. Peripheral lymphadenopathy is typically a benign and infectious process. The key clinical point is determining when to biopsy if not following the expected clinical course to determine a diagnosis and rule out malignancy. This case is interesting as the patient had this recurrent lymphadenopathy that did not respond to antibiotics and did not have any systemic or constitutional symptoms that are often present with malignancies.

General pediatricians will need to recognize a lymphadenitis that does not follow a typical course and maintain suspicion for less common causes, such as malignancy. This case gives a good example of a step-by-step workup for lymphadenopathy that turned out to be malignant.
picture. Clinicians must therefore have higher suspicion with even one symptom of the disease. We outline the case of a 2-month-old Vietnamese girl with cholestasis as presenting symptom of incomplete KD.

**Introduction** Estimates of KD in the USA show an incidence of 19.1/100,000 in children <5 years. Children <3mo account for 1.7–2.2% of all cases based on international data. Cholestasis has been reported as the presenting feature of KD in older children (>6yo), however, there is little data in younger patients. Additionally, KD commonly presents as incomplete in infants, which further delays diagnosis and increases likelihood of adverse outcomes, namely coronary artery aneurysms. We treated a 2-month-old Vietnamese girl who presented acutely ill with cholestasis. We propose the importance of evaluation for KD for any patient <6mo who presents with history of fever and cholestasis.

**Case Report Description** A 2-month-old Vietnamese female was admitted with a 2-day history of fever to 39.7°C. Patient was lethargic and jaundiced with bilious emesis and diarrhea. Concerning labs showed bandemia (30%), WBC 12.7, CRP (18.67 mg/dL), hyperbilirubinemia (total 3.5, direct 1.9), elevated ALT (53), GGT 405, and pyuria (10–20 WBCs/hpf). She was presumed septic and given empiric antibiotics. Abdominal X-ray and Upper GI were normal. RUQ US showed thickened gallbladder wall. She became anemic and coagulopathic and required transfusion. On day of illness 4, she developed conjunctival injection and mother recalled a transient rash on patients’ abdomen. Evaluation for KD was completed. Echocardiogram showed moderately ectatic LAD, L main, circumflex, and R main coronary arteries (PHN Z-scores 2.8–5.7). She was diagnosed with KD and was treated with IVIG and aspirin. Prior to discharge patient developed papular rash on axilla, face, abdomen and legs. The rash was desquamating at one-month follow-up cardiology appointment. Repeat Echo showed resolution of coronary artery dilation and patient was otherwise recovering well.

**Discussion** Serious febrile illness in infants requires extensive workup due to the broad differential of offending causes. As KD often presents as an incomplete picture in the infant population, we have provided a case supporting the utility of low threshold for echocardiograms in febrile patients with signs of KD, including cholestasis. Early diagnosis and treatment of KD in infants <3mo is imperative in preventing coronary artery aneurysm and poor outcomes.

**Abstracts**

**SEIZURE, ABDOMINAL PAIN, AND URINE PINK IN AN ADOLESCENT FEMALE – WHAT’S THE LINK?**

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**Case Report** A 17-year-old female with history of depression was transferred to the pediatric intensive care unit (PICU) from an emergency department (ED) for first time seizure and subsequent encephalopathy after five days of severe, diffuse abdominal pain and vomiting. The night prior to admission, she complained of lightheadedness and then had a witnessed generalized tonic-clonic seizure lasting 45 seconds. She initially returned to her baseline but then had three additional seizures requiring ED evaluation. She received intravenous doses of lorazepam and levetiracetam that aborted the clinical seizures. She remained encephalopathic and was orotracheally intubated for airway protection. Family denied known ingestions but reported she did use nicotine.

Urine drug screen was positive for benzodiazepines, consistent with seizure management. Cerebrospinal fluid analysis was unrevealing. Urinalysis showed moderate ketones and trace blood. Urine pregnancy test and nasopharyngeal SARS-CoV-2 polymerase chain reaction were negative. Head computerized tomography scan showed no intracranial pathology.

On arrival to the PICU, the patient was afibrile, tachycardic, and hypertensive to 171/118 mmHg. She was somnolent on arrival but aroused to sternal rub without focal neurologic deficit. She presented with a Foley catheter that drained pink-orange urine. A nicardipine infusion was started given concern for the development of posterior reversible encephalopathy syndrome (PRES). Thyroid function tests were consistent with euthyroid sick syndrome. BioFire meningitis panel, plasma SARS-CoV-2 IgG, and toxicologic evaluation were all negative. Electrocardiogram showed sinus tachycardia. Magnetic resonance imaging of the brain revealed cortical and subcortical areas of diffusion restriction consistent with PRES. Ultimately, a random urine porphobilinogen and a 24-hour measurement of urine porphyrins collected on hospital day 1 were both markedly elevated. A diagnosis of Acute Intermittent Porphyria (AIP) was made. A gastrointestinal porphyria specialist was consulted and recommended monthly outpatient injections of givosiran upon hospital discharge.

**Discussion** This case illustrates the importance of considering AIP in the differential diagnosis of new onset seizure or encephalopathy associated with hypertension, tachycardia, and abdominal pain in an adolescent. This case also adds to a small number of cases associating AIP with PRES. AIP is often viewed as an adult disease because it typically presents in the third or fourth decade of life. Timely recognition of AIP in the pediatric setting is critical to preventing delays in diagnosis, treatment, and patient education on triggers of acute attacks. AIP attacks are treated with dextrose and hemin infusions to reduce production of porphyrin precursors. Prophylactic treatment of AIP now includes givosiran, an interfering mRNA that reduces levels of intermediates in heme synthesis that are neurotoxic when elevated.

**NOT YOUR AVERAGE SALMONELLA: AN INFANT WITH ACALCULOUS PURULENT CHOLECYSTITIS**

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**Case Report** A previously healthy 13-month-old girl presented to the emergency department with two days of intermittent fussiness, diarrhea, emesis, and decreased activity. CBC, CMP, amylase, and urinalysis were notable only for an alkaline phosphatase level of 1,047 U/L. An abdominal radiograph was normal, and an ultrasound found no evidence of intussusception, free fluid, or obstruction, but did not visualize the appendix. The patient was admitted for dehydration. Within hours, the patient became febrile to 103°F; repeat exam was notable for abdominal distention, hypoactive bowel sounds, and guarding with abdominal palpation while asleep. An emergent CT abdomen and pelvis revealed free fluid and a distended, wall-enhancing gallbladder without stones. Surgery was scheduled at 20 weeks’ gestation due to the vein of Galen malformation. Confirming malformation. Neurosurgery was urgently consulted and recommended monthly outpatient injections of givosiran upon hospital discharge.
consulted and the patient underwent emergent laparotomy. She was found to have perforated purulent cholecystitis with pus present throughout the abdomen. A cholecystostomy tube was placed; cultures from the gallbladder isolated Salmonella species. After 14 days of IV antibiotics she was discharged in good condition to complete 2 weeks of amoxicillin.

Discussion Salmonella gastroenteritis is common; most people recover without antibiotics. Of the estimated 1.35 million annual Salmonella infections in the US, only about 26,500 require hospitalization. Severe complications, while rare, occur more frequently in children; the incidence of invasive Salmonella infection in infants is nearly ten times that of the general population. The predilection of Salmonella for the gallbladder has been well-described, particularly in its role in chronic asymptomatic carriage, but reports of acute gallbladder pathology are rare. Acute acalculous cholecystitis is also very unusual in childhood.

In our patient, presumed Salmonella gastroenteritis was complicated by the development of acalculous purulent cholecystitis with perforation. The development of significant abdominal pain in an infant with acute gastroenteritis should prompt concern for gallbladder pathology, including complications of Salmonella infection, in addition to more common surgical diagnoses like appendicitis and intussusception.

#318 THE INFLUENCE OF THE BRAIN ON THE HEART

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Method A MEDLINE search was conducted for queries including ‘vein of Galen malformation’. Relevant papers were selected for literature review and the patient’s chart was analyzed.

Result Five-day old term male presented due to acute onset of non-bloody, non-bilious vomiting after every feed. Exam was pertinent for hepatomegaly and a flow murmur. Chest x-ray showed a mildly enlarged cardiothymic silhouette with increased pulmonary vascularity. The patient required increasing oxygen support and was sent to the pediatric intensive care unit due to concern for shock. Echocardiogram revealed an enlarged right and left atrium, enlarged right ventricle, severe mitral regurgitation, moderate tricuspid regurgitation, depressed right ventricle systolic function, and elevated pulmonary artery pressures concerning for high-output heart failure and pulmonary hypertension. Patient required intubation, and a head ultrasound was performed which showed symmetric cerebellar hemispheres, no periventricular cysts or hemorrhages, and increased color flow in a dilated vein of Galen, confirming malformation. Neurosurgery was urgently consulted and took him to the operating room for a cerebral angiogram and embolization. Of note, an antenatal ultrasound was performed at 20 weeks’ gestation and there were no concerns on imaging at that time.

Conclusion The vein of Galen malformation should be considered in the differential diagnosis of any newborn with acute onset of vomiting due to potential for varying degrees of heart failure and a tumultuous clinical course.

#319 AN ATYPICAL PRESENTATION OF HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS SECONDARY TO TOXOPLASMOSIS IN AN IMMUNOCOMPETENT 10-YEAR-OLD BOY

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Case Report An important diagnosis to consider in a neonate with sudden onset of vomiting is the vein of Galen malformation. This is a rare event comprising 30% of pediatric vascular and 1% of all pediatric congenital anomalies, however it is associated with a high mortality rate if not discovered and treated in time. We present a neonate in high-output heart failure due to the vein of Galen malformation.
Case Report Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening condition that can occur as primary disorder or secondary to a variety of infections, rheumatic diseases, or malignancies. It is usually diagnosed among patients who are hospitalized with shock-like multiorgan dysfunction and unrelenting fevers. It is associated with high mortality and morbidity. HLH secondary to toxoplasmosis is not uncommon in immunocompromised patients. However, it is rarely reported in immunocompetent patients. We herein, report a case of HLH triggered by toxoplasmosis in an immunocompetent patient.

Case description A previously healthy 10-year-old male, who lives on a farm, presented with acute onset abdominal pain, vomiting, subjective fever, generalized myalgia, lymphadenopathy, and hepatosplenomegaly. Initial labs revealed thrombocytopenia, neutropenia, abnormal hepatic panel, and significantly elevated ferritin, which worsened upon recheck. Further workup revealed increased triglyceride and soluble IL-2 receptor and decreased fibrinogen, which confirmed the diagnosis of HLH. Toxoplasma testing showed positive IgM and IgG with low IgG avidity, indicative of a recent infection. Brain MRI and fundoscopy were unremarkable. Other infectious workup including hepatitis A, B, and C viruses, CMV, and respiratory pathogen panel including COVID-19 were negative. EBV serology was consistent with previous infection. Immunologic work up showed increased CD8 T cells and increased IgM.

Treatment for HLH was not initiated since patient remained well-appearing and afebrile throughout the hospital stay. Treatment for toxoplasmosis was not indicated due to the absence of brain and retinal involvement. Subsequently, laboratory parameters started to improve on day 6 of hospitalization. The patient was discharged the following day. Five days later, platelet count, ANC, ferritin, and fibrinogen levels were normalized.

Discussion Although meeting HLH-2004 diagnostic criteria, the course of illness was not typical, as this patient remained afebrile and clinically well with spontaneous recovery. This is in contrast to 95% of typical HLH cases that have high unremitting fever. The initial suspicion of HLH was low due to the atypical features. We proceeded with the HLH investigations due to hyperferritinemia on repeat testing, which has a 90% sensitivity for HLH. Soluble IL-2 receptor test further confirmed our suspicion. To our knowledge, there have been only a few pediatric case reports of HLH secondary to acquired toxoplasmosis without an underlying condition. No underlying immune deficiency disorder was found.

Conclusion This case highlights the fact that toxoplasmosis can trigger HLH in immunocompetent children. Early diagnosis and prompt treatment are crucial in avoiding a fatal outcome.

## SEVERE ANEMIA AND SWOLLEN WRISTS

Severe anemia and swollen wrists were not your typical presentation: A case of pediatric systemic lupus erythematosus

### Abstracts

### Case Report

Systemic lupus erythematosus (SLE) can have varied initial presentations with autoimmune hemolytic anemia (AIHA) being described as extremely rare, especially in the pediatric population. We describe a patient with severe anemia and swollen wrists who met criteria for the diagnosis of SLE. An 8-year old Laotian female presented to an emergency department with malaise, fatigue, loss of appetite and pallor for 2 months. Additionally, she complained of progressive knee swelling and hand pain with decreased range of motion in her wrists for the past several months and migratory arthritis for the past 2 years. She denied fever, night sweats, bone pain, or weight loss. No recent history of illness. She had a recent history of an aseptic left hip.

On physical exam, she was tachycardic and ill-appearing with significant pallor. No hepatosplenomegaly or lymphadenopathy was noted. Her knees had normal range of motion but were swollen bilaterally with no erythema or tenderness to palpation. Her wrists were swollen bilaterally with decreased range of motion. She had an antalgic gait but otherwise her neurological exam was normal.

Complete blood count revealed a hemoglobin of 4.5 g/dL with a reticulocyte count of 29%. MCV was not reportable (due to agglutination of the red blood cells in the presence of the antibody). White blood cell count was 4.84 and platelet count of 366,000 per µL. Total bilirubin was 3.0 mg/dL, uric acid of 5.2 mg/dL, LDH of 433 U/L, CRP 22 mg/L and ESR 11 mm/hr. Repeat hemoglobin after several blood transfusions was 3.9 g/dL. Direct antibody test was positive for IgG while her complement studies were negative. An elution study later revealed a likely Cold Agglutinin Disease, but her cold agglutinin titer was negative. Donath-Landsteiner test was inconclusive. She was found to be negative for hepatitis C, Tuberculosis, EBV and CMV. Her liver enzymes were normal throughout hospitalization. Anti-nuclear Antibody was positive with a titer 1:320. Double-stranded DNA antibody was positive at 27 IU. Complement studies were normal. IgA was elevated to 400 mg/dL. IgG was elevated to 2432 mg/dL. MRI of both wrists revealed extensive synovitis and erosive arthritis. Rheumatology was consulted due to concern for SLE. She met criteria for SLE via ACR-EULAR 2019 guidelines including ANA titers, ds-DNA, autoimmune hemolytic anemia, and inflammatory arthritis. Her hemoglobin improved and remained stable after she started immunosuppressive therapy with prednisone, rituximab and oral methotrexate.

AIHA, although rare, can be the initial presentation of systemic lupus erythematosus. It is important to keep a broad differential when evaluating a patient with hemolytic anemia for early diagnosis and treatment.
An 8-year-old Laotian female presented to an emergency and was found to have severe anemia and swollen wrists who met criteria for the diagnosis of systemic lupus erythematosus (SLE). Systemic lupus erythematosus (SLE) can have various presentations, and an underlying immune deficiency disorder was found. The patient had a history of acquired toxoplasmosis without an underlying condition. No toxoplasmosis was detected. Only a few pediatric case reports of hemophagocytic lymphohistiocytosis (HLH) secondary to toxoplasmosis have been described. The sensitivity for HLH is 90%. Soluble interleukin-2 receptor (sIL-2R) test further supported the diagnosis. The patient had hyperferritinemia on repeat testing, which has a sensitivity of 90%. HLH was diagnosed due to atypical features. We proceeded with the HLH investigation. The patient was admitted to the intensive care unit with shock-like multiorgan dysfunction and unresponsive sepsis. Treatment for toxoplasmosis was not indicated. EBV serology was consistent with previous infection. Immunologic evaluation was performed, and the results were consistent with a likely cold agglutinin disease. However, cold agglutinins were not found. The patient was discharged the following day. Five months after discharge, the patient was asymptomatic and had a normal comprehensive metabolic panel and liver function test. This case highlights the fact that toxoplasmosis can present with atypical manifestations in children with HLH. It is important to keep a broad differential when evaluating a patient with hemolytic anemia and thrombocytopenia, neutropenia, abnormal hepatic panel, and significant anemia. The differential diagnoses include systemic lupus erythematosus, rheumatologic, oncologic, and infectious processes such as rheumatologic, oncologic, and infectious processes. The patient was admitted to the hospital with malaise, fatigue, loss of appetite and pallor. She had a history of fever, elevated inflammatory markers, and multisystem involvement (cardiac and abdominal). The patient had a history of symptoms over several months, which was more concerning for a chronic process. Further evaluation into an underlying etiology revealed low C3/C4, positive ANA, positive ds-DNA, and positive SS-A, SS-B, chromatin, Anti-Smith, and RNP antibodies. The immunologic profile along with her clinical presentation was consistent with pediatric systemic lupus erythematosus. Treatment with high-dose intravenous steroids resulted in complete resolution of her chest pain and was discharged on oral hydroxychloroquine. pSLE is a multi-faceted and diagnostically challenging disease. Our case highlights the importance of obtaining a thorough history and a low threshold of suspicion for this complex autoimmune condition.

Abstracts

A CASE OF CHROMOBACTERIUM VIOLACEUM INFECTION IN A PATIENT WITH A NEW DIAGNOSIS OF CHRONIC GRANULOMATOUS DISEASE (CGD)

AA Prevot, DL Richls Rivera, AM Abreo, EL Wisner. LSU Health New Orleans, New Orleans, LA

Purpose of Study Opioid use disorder (OUD) amongst pregnant mothers continues to be a rising concern in the United States leading to an increased incidence of Neonatal Abstinence Syndrome (NAS). Amongst women with OUD, co-occurring psychiatric disorders are also common such as depression, anxiety, and PTSD. The postpartum period is stressful for most women and especially for mothers with opioid use disorder whose infants develop NAS. The objective of the current study was to determine if the coping ability of mothers with opioid use disorder is impaired by their coexisting psychiatric diagnoses and perceived postnatal stress.

Methods Used Pregnant mothers with OUD and infant dyads were prospectively recruited from Johnson City Medical Center after ETSU IRB approval. Demographic information was collected from mothers as well as any previous psychological diagnoses. Mothers also completed four questionnaires regarding postnatal coping and bonding. A preliminary statistical analysis was conducted, and dyads were categorized according to the number of psychological diagnoses reported and grouped into Group 1 (0–1 diagnoses) or Group 2 (2+ diagnoses).

Summary of Results Eighteen mother-infant dyads with OUD that had delivered by 7/2/2021 were included in the present study. Of these participants, eight were recruited at a local

Perinatal medicine

Joint plenary poster session and reception

4:30 PM

Thursday, February 10, 2022

#322

POSTPARTUM MENTAL HEALTH IN OPIOID USE DISORDER WOMEN: RESULTS OF PRELIMINARY DATA

D Agansu*, DS Shah. East Tennessee State University James H Quillen College of Medicine, Johnson City, TN

10.1136/jim-2022-SRMC.321

Abstracts

Pregnant mothers with OUD and infant dyads were prospectively recruited from Johnson City Medical Center after ETSU IRB approval. Demographic information was collected from mothers as well as any previous psychological diagnoses. Mothers also completed four questionnaires regarding postnatal coping and bonding. A preliminary statistical analysis was conducted, and dyads were categorized according to the number of psychological diagnoses reported and grouped into Group 1 (0–1 diagnoses) or Group 2 (2+ diagnoses).

Summary of Results Eighteen mother-infant dyads with OUD that had delivered by 7/2/2021 were included in the present study. Of these participants, eight were recruited at a local

intermittent headaches, nausea, emesis, pedal edema, myalgias, arthralgias, and a 10-pound weight loss. Detailed enquiry revealed a long-standing history of lymphadenopathy, neutropenia, microcytic anemia, and migraine headaches. Previous evaluation included normal thyroid studies, Hemoglobin A1c, complete metabolic panel, HIV testing, monospot, and a reassuring peripheral blood smear. Initial evaluation for her chest pain revealed normal EKG and chest x-ray. On physical exam at our facility, she was afebrile with normal vital signs. Soft, mobile, non-tender, <2 cm posterior cervical lymph nodes were palpated. Cardiac exam was unrevealing and no arthritis or rashes were noted. Her lungs were clear, but she had conversational dyspnea. Initial differential diagnoses included systemic processes such as rheumatologic, oncologic, and infectious. Testing revealed elevated troponin, proteinuria, pancytopenia, and elevated inflammatory markers. Coombs test and ACE were negative. D-dimer and creatinine kinase to evaluate for deep vein thrombosis and myositis were normal. EKG was concerning for ST elevation in anterolateral leads, and an echocardiogram revealed a small, globally distributed pericardial effusion. COVID PCR was positive concerning for pericarditis secondary to multisystem inflammatory syndrome in children (MIS-C). Though she met diagnostic criteria for MIS-C with her history of fever, elevated inflammatory markers, and multisystem involvement (cardiac and abdominal), the presence of her symptoms over several months was more concerning for a chronic process. Further evaluation into an underlying etiology revealed low C3/C4, positive ANA, positive ds-DNA, and positive SS-A, SS-B, chromatin, Anti-Smith, and RNP antibodies. The immunologic profile along with her clinical presentation was consistent with pediatric systemic lupus erythematosus. Treatment with high-dose intravenous steroids resulted in complete resolution of her chest pain and was discharged on oral hydroxychloroquine. pSLE is a multi-faceted and diagnostically challenging disease. Our case highlights the importance of obtaining a thorough history and a low threshold of suspicion for this complex autoimmune condition.

Abstracts

A CASE OF CHROMOBACTERIUM VIOLACEUM INFECTION IN A PATIENT WITH A NEW DIAGNOSIS OF CHRONIC GRANULOMATOUS DISEASE (CGD)

AA Prevot*, DL Richls Rivera, AM Abreo, EL Wisner. LSU Health New Orleans, New Orleans, LA

10.1136/jim-2022-SRMC.320

Case Report Chronic Granulomatous Disease (CGD) is a life-threatening immunodeficiency caused by the failure of phagocytic cells to destroy certain bacterial and fungal microbes. Genetic defects in phagocyte oxidase limit the production of microbicidal substances by the neutrophil respiratory burst. Patients are at risk for recurrent infections most commonly caused by Staphylococcus aureus, Serratia marcescens, Nocardia, Burkholderia cepacia, and Aspergillus. Recognition of the disease-causing microbes is essential to early diagnosis and prompt treatment of CGD.

Methods Retrospective chart review. Genetic testing was performed at GeneDx (Gaithersburg, MD).

Results The patient is a 2-year-old male with no past medical history who presented with fever, a necrotizing soft tissue infection and gram-negative bacteremia after playing in stagnant water outside his home. He had no history of pneumonia, abscesses, supplicative adenitis, or superficial skin infections. Wound culture grew Chromobacterium violaceum, a catalase-positive, gram-negative bacillus often found in stagnant water across the Southeastern United States. Neutrophil oxidative burst testing revealed no detectable increase in stimulated granulocyte dihydrodoradamine fluorescence, suggestive of a diagnosis of CGD. Confirmatory genetic testing revealed the patient was hemizygous for a pathogenic variant in the CYBB gene (c.646_648del), which is consistent with a diagnosis of X-linked CGD. Chromobacterium violaceum soft tissue infection was treated with Ertapenem. Patient was started on antimicrobial prophylaxis with trimethoprim-sulfamethoxazole and voriconazole.

Conclusions Pediatricians are trained to recognize CGD in patients with recurrent infection caused by characteristic catalase-positive microbes. Chromobacterium violaceum is a rare organism that can cause severe infection in patients with CGD. This case demonstrates a first-time infection with a rare organism associated with CGD that may not be recognized by pediatricians as needing further work-up. Early suspicion and diagnosis of the patient allowed for initiation of antimicrobial prophylaxis to prevent future life-threatening infections.
Abstracts

Abstract #323 Table 1  One-way ANOVAs for questionnaire scores

<table>
<thead>
<tr>
<th></th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Stress</td>
<td>0.716</td>
</tr>
<tr>
<td>EPDS</td>
<td>0.252</td>
</tr>
<tr>
<td>PBQ</td>
<td>0.932</td>
</tr>
<tr>
<td>CHAOS</td>
<td>0.020*</td>
</tr>
</tbody>
</table>

*indicates significant value at p < 0.05

MAT outpatient clinic and ten were recruited at the time of delivery. Eight of these dyads were categorized in Group 1 and ten in Group 2. Preliminary analyses indicated that the only demographic variable to significantly differ between the two groups was maternal age. An independent samples t-test comparing maternal age between Group 1 (M=26.75, σ=4.06) and Group 2 (M=32.80, σ=3.97) was significant, t(16)=3.18, p=.0016, d=4.09. Thus, maternal age was entered as a covariate in the subsequent ANOVAs. The chi-squared tests for marital status, education level, income and MAT clinic status with each group were not significant, all p’s > .196. There was a significant difference when comparing the CHAOS questionnaire scores between groups F(1,15)=6.74, p =.020 ηp² = .310. The mean for the CHAOS questionnaire scores for Group 1 was 3.63 (σ=3.16) and 12.80 (σ=6.61) for group 2. ANOVAs comparisons for the Perceived Stress Scale, EPDS and PBQ were nonsignificant.

Conclusions Postpartum mental health, specifically evaluation through the CHAOS questionnaire is associated with existing psychiatric comorbidity in opioid use disorder women (when accounting for maternal age). To improve the outcome of infants with NAS, postpartum women’s mental health needs to be addressed. Data collection for this study is ongoing, with further analysis to be conducted once data collection is completed.

Abstract #324 LOOKING FOR CLOSURE – VARIATIONS IN GASTROSCYSIS PAIN MANAGEMENT IN A LEVEL 1 NICU

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10.1136/jim-2022-SRMC.322

Purpose of Study In a prior study, we demonstrated significant variation in the use of opioids for pain management in patients with gastroschisis. To further understand this variation, we evaluated provider’s perceptions of pain and their pain management preferences when managing gastroschisis patients.

Methods Used We conducted a cross-sectional survey of providers in the neonatal intensive care unit (NICU) including neonatology faculty, neonatology fellows, NICU nurse practitioners, NICU bedside nurses, and pediatric surgery faculty.

Abstract #324 Figure 1  A) Perception of pain experienced by the patient in each vignette by provider type. Vignette 1: Sutureless primary closure. Vignette 2: Spring silo placement and serial reduction. Vignette 3: Handsewn silo placement and serial reduction. Vignette 4: Sutured primary closure.
The survey depicted four vignettes with different gastroschisis management strategies. Providers rated their impression of infant pain experience and made pain management recommendations at specific times during the treatment course (figure 1). We used weighted Gwet AC2 kappa statistics (κ) to analyze the level of agreement between five groups of providers to assess their agreement on intensity of pain and medication recommendations.

**Summary of Results**

For pain intensity, the overall percentage agreement between the providers varied from 74% to 87.2% with weighted κ between 0.59 and 0.82, indicating moderate to almost perfect agreement. Likewise, the overall percentage agreement for medication recommendations among providers ranged from 81.5% to 87.2% with weighted κ between 0.71 and 0.80, indicating substantial agreement for all clinical vignettes. Overall, morphine was the most commonly recommended pain medication, followed by acetaminophen.

**Conclusions**

Providers agree on perceptions of pain experienced by gastroschisis patients and pharmacologic pain management strategy. The reported agreement is at odds with the variation identified in actual practice, and a standardized perioperative pain management protocol may be feasible and beneficial for this patient population.

### Abstracts

**#326 IMPLEMENTATION OF SCREENING PROGRAM FOR PERINATAL MOOD AND ANXIETY DISORDERS OF NICU MOTHERS**

1. JM Davidson*, 2. C. Torres, 3. A. Talati. 1. The University of Tennessee Health Science Center, Memphis, TN; 2. LeBonheur Center for Children in Crisis, Memphis, TN

10.1136/jim-2022-SRMC.324

**Purpose of Study**

Perinatal depression affects 10% of new moms. The rate of perinatal depression in NICU moms increases to 20–70%. AAP recommends screening new moms for depression in well child visits throughout the first year of life. It is becoming standard of care of NICUs to screen for perinatal mood and anxiety disorders (PMAD). But there is no good literature on how to implement a screening program. We report here the implementation of PMAD screening program for parents at our NICU and factors that led to success.

**Methods Used**

At our level 4 NICU, we have been screening moms and dads for perinatal depression and anxiety from May 2020 to present (September 2021). A multi-disciplinary team met to decide who, how and when we should screen. Social workers were designated to give the screen and a dedicated physician would score the screen. Edinburg perinatal depression screen (EPDS) was used to screen for depression and perinatal anxiety screening scale (PASS) for anxiety. A clinical psychologist was recruited to our team in Jan 2021. We divided our data in 2 Epochs based on intervention available for moms in severe range of screening: May – Dec 2020 (outpatient referral) and Jan-sept 2021 (in house clinical psychologist).

**Summary of Results**

Since the start of the program, we have had 339 parent dyads due to be screened for PMADs. EPDSs were completed for 208, of those 33 (16%) scored in range of moderate to severe depression. PASSs were completed for 194, of those 67 (33%) scored in range of moderate to severe anxiety. Table shows data divided in 2 epochs.

**Abstract #326 Table 1 Epochs**

<table>
<thead>
<tr>
<th></th>
<th>Due for screening</th>
<th>Screened</th>
<th>Referral made</th>
<th>Received contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoch 1 (May-Dec 2020)</td>
<td>177</td>
<td>106/177</td>
<td>29/106</td>
<td>11/29</td>
</tr>
<tr>
<td></td>
<td>(2 dads)</td>
<td></td>
<td>(38%)*</td>
<td></td>
</tr>
<tr>
<td>Epoch 2 (Jan – Sept 2021)</td>
<td>162</td>
<td>102/162</td>
<td>41/102</td>
<td>40/41</td>
</tr>
<tr>
<td></td>
<td>(4 dads)</td>
<td></td>
<td>(98%)*</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>339</td>
<td>208/399</td>
<td>70/208</td>
<td>51/70</td>
</tr>
</tbody>
</table>

**Conclusions**

In summary, we were successful in implementing PMAD screening for moms in our NICU. 33.6% of our parents screened were affected and a referral to mental health professional was needed. From our cohort, moms were more likely to contact mental health professional if they were present with them in the hospital. A passionate multi-disciplinary team is needed to initiate and continue a such a program which could benefit families in a high stress NICU environment.
Efficacy of Sildenafil in Infants with Bronchopulmonary Dysplasia and Pulmonary Hypertension

KL Dillon*, V Lambo, R Philip, M Weems, AJ Talati. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2022-SRMC.325

Purpose of Study Over the last several years, bronchopulmonary dysplasia (BPD) incidence has remained at 40% in surviving infants ≤28 weeks. Infants with BPD are at high risk for development of pulmonary hypertension (PH). Due to this, pharmacotherapy use for PH has increased. The phosphodiesterase inhibitor sildenafil is the first line treatment of BPD-PH in our NICU; however, limited data exists on its use. The goal of our study was to assess the efficacy of sildenafil in BPD-PH as evaluated by echocardiography (echo) improvements and also clinical improvement –FiO2 requirements or respiratory severity scores (RSS) after starting sildenafil.

Methods Used Data was prospectively and retrospectively obtained. Inclusion criteria was gestational age of <32 weeks, birth weight <1500 g, moderate-severe BPD, diagnosis of PH on echo, and on sildenafil treatment. Severity of BPD was defined based on NICHD classification (Jobe, 2000).

Exclusion from the study included the following: congenital heart disease (except PDA, PFO/ASD <1 cm, or VSD <2 mm if known before enrollment), pulmonary stenosis, and lethal congenital abnormality.

Pulmonary hypertension was evaluated by echo. Echos were performed monthly after 36 weeks PMA as a standard of care and are being re-reviewed by a blinded single pediatric cardiologist.

Summary of Results We currently have 19 patients enrolled in our study with a median EGA of 24 completed weeks of age and a mean birth weight of 658.9 grams. Median respiratory severity score (RSS) at 28d was a median of 6.5. Sildenafil was started at a median age of 40.4 wk. RSS and FiO2 needs improved about 12 weeks after starting sildenafil (see table, graph). Echo evaluations are in progress with the goal of assessing whether echo improvements correlate with clinical improvements after starting sildenafil.

Conclusions From our preliminary results, patients had improvement in their RSS and FiO2 about 12 wk after starting sildenafil. However, BPD is a multifactorial disease and echo improvement will be helpful to correlate with clinical improvement in BPD-PH.

Abstract #327 Table 1

<table>
<thead>
<tr>
<th></th>
<th>Echo 1</th>
<th>Echo 2</th>
<th>Echo 3</th>
<th>Echo 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median CGA, wks</td>
<td>40.3</td>
<td>43.2</td>
<td>47.4</td>
<td>53.25</td>
</tr>
<tr>
<td>Median RSS</td>
<td>6.9</td>
<td>6.35</td>
<td>7.97</td>
<td>4.47</td>
</tr>
<tr>
<td>Median FiO2</td>
<td>0.45</td>
<td>0.475</td>
<td>0.5</td>
<td>0.395</td>
</tr>
<tr>
<td>Median PCO2</td>
<td>59</td>
<td>60</td>
<td>60</td>
<td>54</td>
</tr>
<tr>
<td>Sildenafil dose, Median (range), mg/kg</td>
<td>0</td>
<td>2 (1.2–4)</td>
<td>2 (1–4)</td>
<td>2.375(1–4)</td>
</tr>
</tbody>
</table>

Abstract #327 Figure 1 RSS and FiO2 needs improved about 12 weeks after starting sildenafil.
Purpose of Study Bronchopulmonary dysplasia (BPD) is a serious complication in extremely preterm infants (EP), and lung inflammation plays a central role in its pathogenesis. Systemic corticosteroid reduces lung inflammation but can be associated with short- and long-term adverse effects. Recent studies have indicated the beneficial role of intratracheal administration of budesonide in decreasing BPD or death, however, the data is still limited.

Aim To determine the effect of intratracheal instillation of surfactant-budesonide combination on the incidence of BPD or death as compared with surfactant alone.

Methods Used In this retrospective, single-center study, neonates born between January 2010 and December 2020 with gestational age (GA) of ≤ 28 weeks were included. Infants with major congenital anomalies were excluded. Neonates who received budesonide-surfactant combination (Pulmicort group) were compared with the surfactant alone group (control). The primary outcome was a composite of BPD grade 2 or 3 (defined as in Jensen et al; 2019) or death before 36 weeks postmenstrual age (PMA). In the analysis of all outcomes, the results were adjusted for known risk factors of BPD.

Summary of Results A total of 1333 EP infants (314 in the Pulmicort and 719 in the control group) were included in this study. The rate of BPD grade 2 or 3 or death <36 weeks PMA did not differ between the Pulmicort group and the control group. (66.6% and 55.3% respectively, adjusted relative risk (RR) with the Pulmicort group is 1.104; 95% confidence interval [CI] 0.967 to 1.233; P=0.135). There was no significant difference between the two groups in the rate of BPD grade 2 or 3 alone (48.9% vs. 61.3%; adjusted RR with the Pulmicort group is 1.162; 95% CI 0.999 -1.317; P=0.051) and death before 36 weeks PMA alone (13% vs. 12.7%; adjusted RR with Pulmicort group is 0.762; 95% CI 0.507-1.126; P=0.176). There were no significant differences in the rate of other common NICU morbidities between the two groups.

Conclusions In EP infants, intratracheal instillation of budesonide-surfactant combination compared with surfactant alone did not decrease the rate of BPD or death. Further trials are needed.

**Abstract #330 Table 1 Infant data comparison between integrated management and non-integrated management**

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>Mothers with Integrated Management</th>
<th>Mothers without Integrated Management</th>
<th>T-Test P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Average Buprenorphine Dose at Delivery (mg)</td>
<td>2.1</td>
<td>10.5</td>
<td>0.0002</td>
</tr>
<tr>
<td>Number of Infants with NAS Diagnoses</td>
<td>2</td>
<td>5</td>
<td>0.3</td>
</tr>
<tr>
<td>Number of Infants with Morphone</td>
<td>0</td>
<td>3</td>
<td>0.04</td>
</tr>
<tr>
<td>Treatment</td>
<td>Average Birthweight (g)</td>
<td>3409</td>
<td>3117</td>
</tr>
<tr>
<td>Average Hospital Length of Stay (days)</td>
<td>4</td>
<td>7</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Conclusions The small sample size serves as a limitation in the analysis, yet there are still significant differences seen in the outcomes for infants based on integrated management. Integrated management of opioid use disorder infants trends towards improved outcomes in exposed infants with less hospital stay and no need for morphine along with low dose during pregnancy in interim analysis of prospective study.
Abstracts

#331 PLACENTAL PATHOLOGY IN FETAL CONGENITAL HEART DISEASE

1RL Leon*, 1K Sharma, 1I Mir, 2SL Brown, 1LF Chalak. 1The University of Texas Southwestern Medical Center, Dallas, TX; 2Parkland Health and Hospital System, Dallas, TX

Purpose of Study Pathologic placental lesions are associated with an increased risk of neonatal morbidity and mortality. The prevalence and types of pathologic placental lesions in pregnancies complicated by fetal congenital heart disease (CHD) are not well characterized. The objective of this study was to compare prevalence of placental lesions using the Amsterdam classification system in neonates with CHD and a healthy control cohort.

Methods Used In this single-center cohort study between 2010 and 2019, we determined the prevalence of pathologic lesions of the placenta in fetuses with moderate to severe CHD compared to a healthy control group. We used the Amsterdam classification system to divide placental lesions into four main categories: 1) maternal vascular malperfusion (MVM), 2) fetal vascular malperfusion (FVM), 3) acute inflammatory, and 4) chronic inflammatory. Additionally, we quantified placentas with umbilical cord abnormalities, large for gestational age (LGA) (<10th percentile), and small for gestational age (SGA) (<10th percentile). Placentas in each group with any pathology and those with multiple pathologies were also determined and birth growth parameters were compared. Prevalence of each lesion type, presence of any pathology, and presence of multiple pathologies were compared using Chi square analysis or Fisher Exact test where appropriate.

Summary of Results A total of 405 pregnancies complicated by fetal CHD were assessed for inclusion and 387 had placental pathologic examination performed for comparison to our healthy control cohort (n=40). Pathologic lesions were present in 82% of placentas from fetuses with CHD compared to 28% of placentas from healthy controls (p<0.01). Every category of placental pathology was more prevalent in the fetal CHD group except acute inflammatory lesions [chronic inflammatory 29% vs. 0% (p=0.01); acute inflammatory 28% vs. 28% (p=1.00); MVM 18% vs. 0% (p=0.01); and FVM 14% vs. 0% (p=0.01)]. Placentas classified as small for gestational age (<10th percentile) occurred in 31% of the CHD cohort and those classified as large for gestational age (>90th percentile) were present in 12% of the CHD cohort and neither gross pathology was found in the healthy control group (p<0.01 and p=0.01, respectively). Umbilical cord abnormalities occurred in 19% of fetal CHD placentas and were absent in the control group (p<0.01). Although birthweight z-score did not differ significantly between fetal CHD and control groups (-0.28 ± 1.08 vs. -0.06 ± 0.75, respectively; p=0.09), head circumference z-score at birth was significantly less in the fetal CHD cohort (-0.52 ± 1.22 vs. 0.06 ± 0.69; p<0.01).

Conclusions Pathologic lesions of the placenta including maternal and fetal vascular malperfusion lesions and chronic inflammation are highly prevalent in fetal CHD and may be associated with decreased head growth. Pathologic examination of the placenta should be considered in all pregnancies complicated by fetal CHD.

#332 COMPARING MATERNAL SUBSTANCE USE AND PERINATAL OUTCOMES BEFORE AND DURING THE COVID-19 PANDEMIC: AN OBSERVATIONAL STUDY

J Lien*, D Rana. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

Purpose of Study There is evidence suggesting increased cannabis and tobacco use in pregnant women during the COVID-19 pandemic. There is little to no literature discussing changes in neonatal outcomes in relation to maternal substance use and other socioeconomic changes with respect to the COVID-19 pandemic.

Methods Used In this cross-sectional observational study, we identified neonates born to mothers with evidence of substance use before the start of the COVID-19 pandemic (Jan 2018 to Dec 2019) compared to during the pandemic (Jan 2020 to April 2021). Evidence of maternal substance use was identified by self-reported drug use or results from maternal urine drug screen (UDS), neonatal UDS, or neonatal umbilical cord drug screen.

Summary of Results We identified 319 mother and 330 infant dyads pre-pandemic, and 230 mother and 240 infant dyads during the pandemic who met inclusion criteria. There was no significant difference in maternal age (28.5 ± 5.5 vs 28.4 ± 5.6 years; p=0.87), gestational age (37 [33 – 38] vs 36 [33 – 38] weeks; p=0.16), infant sex (50.6% vs 52.1% male; p=0.73), number of Caesarean sections (43.3% vs 48.5%; p=0.35), or neonatal length of stay (11 [5 – 26] vs 12 [6 – 25] days; p=0.76) before versus during the pandemic. There was a significant decrease in birth weight (2315 ± 815 vs 2455 ± 861 grams; p=0.048) but no significant difference in discharge weight (2665 ± 805 vs 2748 ± 773 grams; p=0.219) when comparing during versus pre-pandemic. There was a significant increase in fentanyl (12.2% vs 0.6%; p<0.001) and tobacco use (63.5% vs 33.4%; p<0.001) during the pandemic when compared to pre-pandemic. Although not statistically significant, there was an increase in cannabis use as well. Additionally, while not statistically significant, there was an increase in incidence of NAS during the pandemic (20.0% vs 15.8%; p=0.30). Management of NAS with morphine only (p=0.42) versus a combination of morphine and...
perinatal risk factors for lenticulostriate vasculopathy in extremely preterm population

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10.1136/jim-2022-SRMC.331

Purpose of Study Recent studies have described the increased incidence of lenticulostriate vasculopathy (LSV) in extremely preterm infants (EP). However, limited data is available on perinatal risk factors, neurodevelopmental outcomes, and the overall significance of LSV in EP infants. The aim of our study was to identify the incidence and perinatal risk factors associated with LSV in EP infants and to describe the association between the cranial ultrasound findings with 2-year neurodevelopmental outcome or death.

Methods Used In this retrospective, single-center study, neonates born between January 2014 and December 2020 with gestational age (GA) of ≤28 weeks were included. Infants with major congenital anomalies were excluded. Infants with a diagnosis of LSV were identified (LSV group) and compared with the remaining infants (control).

Summary of Results LSV was detected in 84 (11%) infants out of the 793 EP infants. All LSV were detected at a postnatal age (PMA) ≥28 weeks. Only infants who survived beyond a PMA of 28 weeks (n=712) were included in further statistical analysis. LSV was predominant in infants who are more immature and have lower birth weights (BW), p<0.001. On multivariate regression analysis, the presence of LSV in EP infants remained significantly associated were lower GA, lower BW, intratracneal instillation of budesonide in combination with the exogenous surfactant, sepsis, prolonged duration of hydrocortisone for >30 days, congenital CMV infection, maternal tobacco use and hypertension. Other common NICU morbidities such as bronchopulmonary dysplasia and necrotizing enterocolitis were not significantly associated with increased rates of LSV. The timing of LSV detection ranged from a PMA of 28 to 48 weeks. Sonographic detection of LSV occurred sooner in the more mature infants with GA of 25–28 weeks (n=38) at a median (IQR) postnatal age (PNA) of 45 (42–85) days and PMA of 33 (32–38) weeks than in infants with GA of 22–24 weeks (n=46) at PNA 96 (84–112) days and PMA 37 (35–39) weeks, p<0.001. Lower GA and prolonged duration of mechanical ventilation associated with the delayed detection of LSV beyond 36 weeks PMA, p<0.01. There was no statistically significant difference in death or neurodevelopmental impairment at 18–24 months between infants with LSV or without LSV.

Conclusions In extremely preterm infants, LSV could be a benign finding. Further investigations are warranted to substantiate our results.

Abstract #334

NITRIC OXIDE USE AFTER IMPLEMENTATION OF A SEVERE BRONCHOPULMONARY DYSPLASIA GUIDELINE

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10.1136/jim-2022-SRMC.332

Purpose of Study There has been much research showing that preterm babies with severe bronchopulmonary dysplasia (sBPD) are at high risk for pulmonary hypertension (PH) which is associated with increased morbidity and mortality. Specialized care of infants with sBPD may reduce the severity of PH, but it is unclear what interventions affect the development of PH in sBPD patients. Though not approved, iNO is frequently used for this condition. In the fall of 2019, we began a QI project to standardize management of sBPD patients in our Level IV all-referral NICU. Phase 1 included a low-rate, high-tidal volume strategy for mechanically ventilated sBPD patients, and there were no practice changes to PH screening or treatment. We hypothesize that use of a standardized ventilator management guideline for sBPD patients is associated with a reduction in PH exacerbations requiring treatment with inhaled nitric oxide (iNO).

Methods Used This is a retrospective study of patients with sBPD managed in a single Level IV NICU over 2 epochs. Patients in epoch 1 were born from 2016–2018 and diagnosed with sBPD. Patients in epoch 2 were managed in 2020 following local sBPD ventilator guidelines. The primary outcome was iNO use after 36 weeks postmenstrual age (PMA). Secondary outcomes included duration of iNO use in patient that required iNO, frequency with which iNO was initiated, and survival to discharge.

Summary of Results There were a total of 86 patients. Epoch 1 included 60 patients with a median gestational age of 25 weeks (IQR 24–26 weeks) and a median birthweight of 705 grams (IQR 520–860 grams). 41% of the patients from Epoch 1 were intubated at 36 weeks PMA. Epoch 2 included 26 patients with a median gestational age of 25 weeks (IQR 24–25 weeks) and a median birthweight of 690 grams (IQR 570–800 grams). 60% of the patients from Epoch 2 were intubated at 36 weeks PMA. During epoch 2, median monthly ventilator management guideline was 66%. The% of patients who had iNO initiated more than once, along with other results of iNO use are shown in figure 1.

Conclusions Implementation of a standardized sBPD management guideline did not decrease the number of babies receiving iNO, however we noticed a trend towards decrease duration of iNO use and decreased frequency of iNO use for patients who had received this therapy. Overall survival of this complex babies also seem to be improving. Re-evaluation after a period with improved guideline compliance will be necessary to determine if the observed absolute reduction in iNO use.

Abstract #334 Figure 1 iNO use in BPD-PH
Purpose of Study Bronchopulmonary Dysplasia (BPD) is a chronic lung disease seen as a serious sequela of preterm birth. It is defined in infants born at less than 32 weeks gestation (WGA) with persistent evidence of parenchymal lung disease at 36 weeks post menstrual age (PMA). Despite advancements in neonatal care leading to improved outcomes and survival of the most preterm infants, the development of BPD in these infants has remained a persistent problem associated with prolonged hospitalizations and multiorgan system involvement. The development of BPD is multifactorial, but particular postnatal respiratory management strategies have been shown to improve BPD outcomes. Optimal management strategies have changed over time and wide variations in practice exist between different NICUs as well as between different physicians within the same NICU. Our neonatology division has developed and implemented a standardized respiratory management protocol that focuses on lung protective ventilation strategies, exogenous surfactant administration, and early caffeine initiation. The aim of this study is to decrease the incidence of BPD in our NICU by 10% within one year following protocol implementation.

Methods Used This study is a medical chart review to determine the success of a quality improvement project involving the implementation of a standard of care preterm infant respiratory management protocol. The protocol was implemented for all infants born at less than 32 WGA as the standard of care. We reviewed the medical records of eligible infants at least one year before and will review the same cohort of infants one year after implementation of the protocol to evaluate changes in BPD rates.

Summary of Results The primary goal of the study is to decrease the incidence and/or severity of BPD in our NICU. Secondary outcomes include growth, days of invasive mechanical ventilation, and timing of surfactant administration.

Conclusions This study is ongoing with the first cycle focused on protocol implementation and education. Prior to initiation of this protocol the rate of BPD in our NICU was around 30% which is just slightly above the incidence of 28% reported by the Vermont Oxford Network. Based on preliminary initial data we have noted less infants requiring invasive mechanical ventilation, more infants receiving exogenous surfactant administration, and more infants being maintained on positive end expiratory pressure (PEEP) until they are at least 32 weeks or 1250 grams which is thought to be associated with improved weight gain. With ongoing analysis and cycles of this quality improvement project we hope to see continued improvement in the outcomes of our very preterm infant populations.
with threshold probabilities of survival for recommending active treatment. This study aims to quantify obstetric provider prognostic discordance (PD) of survival estimates at 22 weeks’ gestation and to evaluate if PD is associated with survival thresholds above which providers recommend antenatal steroids, a surrogate marker for obstetric active treatment.

**Methods Used** We administered a case-based survey at 2 Atlanta hospitals to obtain provider survival estimates and survival thresholds for administration of antenatal steroids. We used the updated NICHD Extremely Preterm Birth Outcomes Tool to obtain data-driven survival estimates. PD was calculated as provider minus data-driven survival estimate and classified as pessimistic (provider estimate below hospital range of data-driven estimate), accurate (within range), or optimistic (above range).

**Summary of Results** Of 57 respondents (23% response rate), there were 13 obstetric residents, 2 maternal-fetal medicine fellows, 23 obstetric attendings, 7 maternal-fetal medicine attendings, 8 midwives, and 4 others. At 22 weeks’ gestation, the overall PD was -7% (-17, 5). Of the responses, 16% were optimistic, 53% were accurate, and 31% were pessimistic. No association was detected between PD and provider type (P=0.61), age (P=0.53), or years of experience (P=0.89). The median survival threshold above which providers recommended antenatal steroids was 10% (0, 20). PD, by calculated value or group, was not associated with survival thresholds above which antenatal steroids were recommended (figure 1).

The willingness to offer antenatal steroids increased from 54% to 81% of providers when scenarios changed from a family that was undecided about resuscitation to one who desired resuscitation.

**Conclusions** While prognostic discordance exists in obstetric providers, it is not associated with survival thresholds above which they recommend antenatal steroids. Our data suggests that prognostic discordance or perceptions of prognosis has a minimal influence on willingness to offer antenatal steroids while family intent for resuscitation has a large influence.
EVALUATION OF TRANSCUTANEOUS BILIRUBINOMETRY MEASUREMENT TIMING AND ITS IMPACT ON SERUM BILIRUBIN TESTING

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Purpose of Study Hyperbilirubinemia is a common occurrence among newborns, enough so that testing for bilirubin levels is a standard component of newborn evaluation. In low-risk babies, transcutaneous bilirubinometry (TcB) can be used as a screening tool. At Regional One Hospital, the exact timing of that measurement can vary, with some neonates being tested near 12 hours of life (HOL) and some being tested near 24 HOL. If the level is over 90th centile on AAP nomogram a serum bilirubin test is performed. The purpose of our study was to identify the optimal timing to reduce the number of subsequent serum tests.

Methods Used This was a retrospective study of neonates with TcB measurements in the Well-baby Nursery (WBN) at Regional One Hospital. Data were obtained on the timing and results of TcB and serum measurements from April 2021 through June 2021. Data on race, gender, gestational age, weight, and significant pathologies were also obtained. Statistical analysis employed a chi squared 2x2 table with a p value set at <0.05 for statistical significance. The Bilitools program was utilized to evaluate risk categorization of each measurement.

Summary of Results We evaluated 331 cases that were divided into groups based on timing of TcB as shown in figure 1. The average birth weight was 3.13kg. Gestational age ranged from 33 to 42 wk. The results from the timing breakdown are shown in table 1. When compared to Group 1, Group 3 had much higher need for serum testing (p =0.0029), while a combined Group 1 and 2 also had lower need for serum testing compared to Group 3 (p=0.0042). There was no difference in race or gender and need for repeat testing. Bilitools program analysis showed overestimation of risk in each timing group. 69% of TcB in Group 1, 92% of tests in Group 2, and 83% of tests in Group 3 were classified in a higher risk category than their subsequent serum measurements indicated.

Abstract #339 Table 1

<table>
<thead>
<tr>
<th>Time of TcB (HOL)</th>
<th>(\geq 12)</th>
<th>13-18</th>
<th>(\geq 19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Group 1)</td>
<td>(Group 2)</td>
<td>(Group 3)</td>
<td></td>
</tr>
<tr>
<td>Total TcB Measures</td>
<td>93</td>
<td>89</td>
<td>94</td>
</tr>
<tr>
<td>Serum Tests Ordered</td>
<td>30%</td>
<td>37%</td>
<td>52%</td>
</tr>
</tbody>
</table>

Conclusions The timing of TcB did impact the need for serum tests ordered. Patients who received a TcB after 19HOL had a higher rate of serum testing when compared to those who received earlier transcutaneous measurements. Transcutaneous tests overestimated bilirubin values consistently at all times when the risk zone was identified by nomogram from Bhutani et al. Overall, analysis indicates earlier TcB may be better for optimizing the amount of serum bilirubin tests performed.

IMPACT OF PROLONGED HYPEROXIA ON EXTREMELY PREMATURe INFANTS

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Purpose of Study Premature neonates are at increased risk for bronchopulmonary dysplasia (BPD), a chronic lung disease with severity defined by duration of respiratory support and oxygen requirement. While medically necessary, mechanical ventilation inflicts barotrauma, and oxygen exposure has cytotoxic effects from reactive oxygen species. Few studies investigated the associated risks from prolonged hyperoxia exposure in preterm neonates. There is limited knowledge on the potential effects of prolonged hyperoxia in preterm neonates. We hypothesize prolonged exposure to hyperoxia in extremely premature neonates increase the risk of in-hospital mortality and morbidities of prematurity.

Methods Used A retrospective review was conducted of extremely premature neonates (≤ 27 weeks gestational age, WGA, birth weight, BW, ≤ 1,500 g) admitted to a single, tertiary NICU from January 2008 to July 2010 (n=244). Prolonged hyperoxia exposure was defined as requiring a fraction of inspired oxygen (FiO2) ≥ 0.4 and/or inhaled nitric oxide (iNO) administration with positive pressure ventilation (mechanical ventilation, nasal CPAP, or high flow nasal cannula ≥ 2 L/min) for at least 3 days (aggregate and/or uninterrupted duration). T-test and fisher’s exact test were used for continuous and categorical variables, respectively. BPD was treated as an ordinal variable and proportional odds logistic regression model was applied. Statistical significant was a P value <0.05.

Summary of Results Approximately 64% of extremely preterm neonates experienced prolonged hyperoxia exposure (n=155). Patients with prolonged hyperoxia exposure were significantly more premature and smaller at birth compared to patients without prolonged hyperoxia (24.9 vs. 25.8 WGA, p < 0.001; BW 718 g vs. 832 g, p < 0.001, respectively). Patients who experienced prolonged hyperoxia had significantly higher rates of several morbidities including persistent patent ductus arteriosus (80.6% vs. 38.2%, p < 0.001), retinopathy of prematurity (ROP) (67.4% vs. 52.9%, p = 0.048), and interventricular hemorrhage (IVH) (44.5% vs. 30.3%, p = 0.03). Infants that experienced prolonged hyperoxia had significantly higher FiO2 requirement by 28 days of life compared to infants without prolonged hyperoxia (FiO20.44 vs. 0.28, p < 0.001, respectively) and were more likely to have more severe BPD compared to those without hyperoxia while controlling for FiO2 levels (severe BPD in hyperoxia vs non-hyperoxia: 29.2% vs. 2.3%; moderate BPD: 40.9% vs. 29.5%; mild BPD: 18.2% vs 50.0%; none: 11.7% vs 18.2%; p < 0.001).
There was no significant difference in survival rates between patients with and without hyperoxia exposure (HR = 1.13, 95% CI = 0.65–1.98, p = 0.7). Patients with hyperoxia exposure were more likely to be discharged with oxygen (66.5% vs 38.2%, p < 0.001).

Conclusions Exposure to prolonged hyperoxia was not associated with mortality rates in extremely preterm neonates. However, they experienced significantly higher rates of moderate to severe BPD, ROP, PDA, and IVH.

Abstract #341 POTENTIAL COST SAVINGS ASSOCIATED WITH BUBBLE CONTINUOUS POSITIVE AIRWAY PRESSURE IN NEONATES: A RETROSPECTIVE STUDY

Purpose of Study Bubble continuous positive airway pressure (bCPAP) is a well-established non-invasive respiratory support mechanism in preterm infants. Use of bCPAP decreases rates of intubation, mechanical ventilation and bronchopulmonary dysplasia (BPD) without increased morbidity and mortality. Heated high flow nasal canula (HFNC) lacks evidence to support its use as a primary mode of support in the neonate. We propose there are cost savings with the implementation of bCPAP as an alternative to HFNC given its lower aggregated cost, without a detrimental effect on outcomes.

Methods Used Data was collected in the context of quality improvement work and approved as not human subjects research through institutional IRB. Infants admitted to Norton Children’s Hospital NICU during the year 2020 with birthweight less than 1500 g or gestational age less than 32 weeks at birth were included. Infants were excluded if they required tracheostomy, did not require bCPAP or HFNC support, or expired. Days of each method of respiratory support were collected, as well as associated respiratory charges and clinical outcomes: length of stay (LOS) and BPD.

Patients were divided into groups based upon the percentage of non-invasive ventilation days spent on bCPAP. Charges were converted to cost utilizing the institution specific 2020 cost to charge ratio from the Kentucky Labor Cabinet. Summative costs were calculated for each patient and potential savings were estimated by converting applied costs for HFNC to bCPAP. Descriptive statistics were used to compare groups utilizing p-values for Kruskal-Wallis rank sum and Chi-square tests.

Summary of Results 110 patients were included in the final analysis. There was no significant difference between groups for gestational age, though infants in Group A had a lower birthweight than the other groups (p=0.046). Patients in group A with the least amount of bCPAP use had significantly greater ventilator days; conversely, group D with the highest proportion of bCPAP use, had significantly lower ventilator days (p<0.001). Rates of BPD and LOS decreased significantly between groups as the percentage of bCPAP days increased.

Noninvasive respiratory costs were lowest in group D (p=0.004). There was a trend towards lower respiratory costs as the percentage of bCPAP days increased. There was an average potential cost savings of $1675 per patient if noninvasive ventilation days were converted from HFNC to bCPAP support for all groups, with greater potential for cost savings in groups with lower bCPAP use (p<0.001).

Conclusions As respiratory practices evolve in NICUs, costs of common strategies should be considered. Protocols prioritizing the use of bCPAP over other noninvasive respiratory support show potential cost reduction in addition to clinical benefit. Limitations of this study include the utilization of charge data from a single NICU in one calendar year, as well as utilizing a system cost to charge ratio that includes an adult facility located on the same campus.

Abstract #342 REDUCING SPONTANEOUS INTESTINAL PERFORATION AMONG EXTREMELY PRETERM INFANTS: A QUALITY IMPROVEMENT INITIATIVE

Purpose of Study Postnatal indomethacin prophylaxis decreases severe IVH but increases the risk of spontaneous intestinal perforation (SIP) among extremely preterm infants. Our center utilized single dose indomethacin prophylaxis as part of a bundle of care for extremely preterm infants. We undertook a quality improvement initiative due to concerns of SIP. Our SMART aim was to decrease the rate of SIP among extremely preterm infants by 50% within 12 months.

Methods Used We included infants from 22w 0d to 27w 6d inborn from July 2019 to September 2021. We included infants with a birth weight less than 400 grams and those with congenital anomalies. The primary outcome was the rate of SIP analyzed via statistical process control charts to detect special cause variation. Balancing measures included the rate of severe IVH in the first week after birth. Process measures included the use of indomethacin prophylaxis, standardized electronic medical record order-sets, and antenatal indomethacin use.

Summary of Results We included 259 patients, 117 pre-intervention and 142 post-intervention, with a mean gestational age of 25w 4d ± 12d and birth weight of 739 ± 222 grams. The pre-intervention rate of SIP was 6.8% and post-intervention rate of SIP is 4.2%. There have been 52
GROWTH FAILURE IN PRETERM INFANTS IS BARRIERS TO KANGAROO CARE IN THE NEONATAL INTENSIVE CARE UNIT

TD Tran*, AM Khan, J Ruggiero. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

10.1136/jim-2022-SRMC.342

Purpose of Study To investigate median time to first kangaroo care (KC) and medical barriers to KC in extremely low birthweight (ELBW) infants, and to evaluate healthcare provider perceptions of KC.

KC provides skin-to-skin contact between an infant and a parent’s bare chest to promote bonding and co-regulatory physiology. Potential benefits include decreased infant mortality and improved mother-infant bonding. Due to humidity protocols, KC may be initiated day of life (DOL) 10 in the neonatal intensive care unit (NICU) at Children’s Memorial Hermann Hospital (CMHH).

Methods Used Retrospective chart review of 220 infants born <28 weeks at CMHH between August 2018 and April 2021 was performed. Data was available for 60/220 infants. To assess barriers to KC, we examined two time points: first possible (DOL 10) and first actual day of KC. We analyzed characteristics including presence of respiratory support, supplemental oxygen, vasopressors, intraventricular hemorrhage, and central access (umbilical catheter, peripherally inserted central catheter (PICC), surgical line, or peripheral arterial line). We then surveyed NICU healthcare providers (n=110) at CMHH to assess comfort in facilitating KC. Perception survey was distributed via Qualtrics survey, and data were analyzed in R (version 4.0.5) using McNemar’s test to evaluate differences in categorical variables in paired samples of providers’ roles. Proportional odds logistic regression was performed to examine association between perceptions and role. Regression models were adjusted for years of providers experience within roles. Statistically significant difference was defined as P value <0.05.

Summary of Results Median time to first KC was 11.2 days (0.32 – 32 days). Of characteristics examined, only PICC presence was significant between DOL 10 and day of first KC (p=0.009). 99% of healthcare providers thought KC was beneficial to parent and infant, and 98% deemed an infant medically stable for KC with PICC line present. 22% knew how to document KC in the electronic medical record. Nurses were 3.44 times more comfortable in facilitating KC than physicians (97.3% CI, OR 0.29, p=0.05). Providers with 5–10 years experience were 3.08 times more likely to promote KC than providers with 0–5 years experience (CI 97.5%, p=0.04); odds ratio was 3.62 for those with >10 years experience (CI 97.3%, p=0.005). Though not statistically significant, neonatal nurse practitioners (NNP) and respiratory therapists (RT) were most comfortable initiating KC (CI 97.3%, p=0.17 for NNP; CI 97.5%, p=0.58 for RT).

Conclusions Median time to first actual KC was similar to first possible KC. Although not identified by providers as a barrier, PICC presence was associated with delayed KC. Nurses are more comfortable than physicians in facilitating KC, and survey results overall demonstrated variability among provider comfort. These results will inform a prospective study to improve timing and documentation of first KC, and address barriers through education of staff and parents in the NICU.

GROWTH FAILURE IN PRETERM INFANTS IS BARRIERS TO KANGAROO CARE IN THE NEONATAL INTENSIVE CARE UNIT

10.1136/jim-2022-SRMC.341

Purpose of Study The objective of this study is to determine if an altered microbiome exists in infants with growth failure when compared to infants with normal growth.

Methods Used This is a prospective cohort study. Infants <29 weeks gestation were enrolled at Parkland Hospital once they reached full volume enteral feeds. Fecal samples were collected weekly. For analysis, enrolled infants were divided into cohorts for each sample defined as controls (appropriate weight gain on appropriate calories of 120–130 kcal/kg/day) or poor growth (poor weight gain on increased calories of >130 kcal/kg/day). Information was obtained regarding maternal demographics, infant characteristics, diagnoses, dietician recommendations, and growth chart data. Selected fecal samples were analyzed for microbiome composition by qRT-PCR and next generation sequencing.

Summary of Results We conducted an intermin analysis of 87 stool samples from 35 infants. 28 samples were from controls and 59 were from the poor growth cohort. The phyla Enterobacteriaceae, Bacteroidetes, and Firmicutes showed no difference between the two groups. There were statistically significant decreases in the genera Enterococcus (p<0.01) and Clostridiae (p<0.05) in the poor growth cohort. Next generation sequencing is ongoing.

Conclusions There was a significant decrease in the representation of Enterococcus and Clostridiae, which belong to the phyla Firmicutes, in the poor growth cohort of samples. Firmicutes species are known to have increased metabolism of carbohydrates and allow for greater energy exposure, which we speculate may contribute to poor growth in our cohort. Our study adds to the growing body of evidence that alteration of the microbiome is associated with poor growth in preterm infants. This may ultimately represent a therapeutic target for growth failure in preterm infants.
Abstracts

#345 PATENT DUCTUS ARTERIOSUS AND BRONCHOPULMONARY DYSPALASIA ASSOCIATED PULMONARY HYPERTENSION: A CASE CONTROL STUDY

SJ Gentle*, C Travers, B Pearce, WA Carlo, N Ambalavanan. University of Alabama at Birmingham, Birmingham, AL

Purpose of Study Extremely preterm infants who develop bronchopulmonary dysplasia-associated pulmonary hypertension (BPD-PH) are at higher risk for mortality; however, few modifiable risk factors for BPD-PH are known. We hypothesized that the presence and duration of ductus arteriosus patency would be associated with the development of BPD-PH.

Methods Used We performed a retrospective case-control study among infants 22w 0d to 27w 6d gestation born between 2017 and 2020, hospitalized at the University of Alabama at Birmingham, and on respiratory support on or after postnatal day 28 with at least one echocardiogram performed after day 28. Infants that developed evidence of echocardiographic pulmonary hypertension (cases) were compared to infants without pulmonary hypertension (controls). Data from all echocardiograms performed during the hospitalization after 28 weeks’ postmenstrual age (PMA) were included. A PDA was further characterized by size, postnatal age of closure, and pharmacologic management. Chi square and t-test analyses were used to compare categorical and continuous variables including gestational age, birth weight, race/ethnicity, sex, and small for gestational age. Binary logistic regression analysis was performed adjusting for covariates that differed significantly between groups. A Kaplan-Meier analysis compared the duration of ductal patency between infants with BPD-PH and those with BPD alone.

Summary of Results Results: Over the 4-year period, 138 infants developed BPD alone and 89 infants developed BPD-PH. Compared to infants with BPD alone, infants with BPD-PH were of lower birth weight (632±164 g vs 808±207 g; p<0.001), more likely to be SGA (24% vs 12%; p=0.03), and female sex (56% vs 42%; p=0.03). Infants with BPD-PH had a higher incidence of PDA (52% vs 28%; p<0.001) and moderate to large PDA (45% vs 23%; p=0.001) at 28 weeks’ PMA. The PMA at PDA closure was associated with BPD-PH by logistic regression (aOR 1.08 per wk; 95% CI 1.01 to 1.16) and Kaplan-Meier analysis (hazard ratio 2.4; 95% CI 1.58 – 3.58; p<0.001) (figure 1). The area under the curve from ROC analysis for BPD-PH and PMA at ductal closure was 0.62.

Conclusions In extremely preterm infants on respiratory support beyond postnatal day 28, BPD-PH was associated with a higher incidence and longer duration of exposure to a PDA compared to infants with BPD but without PH.

Pulmonary and critical care medicine

Joint plenary poster session and reception

4:30 PM

Thursday, February 10, 2022

#347 CYSTIC FIBROSIS THROMBOSIS RISK AND RELATION WITH ORAL CONTRACEPTIVE PILLS

OH Al-Jobory, Y Tawfeeq*, H Aljunaili, K Alhbshi, T Vo. Texas Tech University Health Sciences Center, Amarillo, TX

Case Report CF patient always at risk of thrombosis. SVC is one of the expected complications in CF patients having CVC but still considered uncommon and mostly not severe.

We report a case of life-threatening SVC syndrome in CF patient, who have no thrombophilia but use OCPs.

Case 19 y F with CF presented to the hospital with facial swelling associated with upper extremities swelling, she denied SOB, chest pain or allergies. Medication she use combined oral contraceptive pills. She received epinephrine for suspected anaphylactic and sent home, the swelling was worsening, her neck became tight so she went to the hospital again, labs: plt 334, PT 10.3 pr 23.9 INR 0.99 vit K < 0.04, fibrinogen 460, ABC neg.

US of upper extremities showed R IJ and SC vein occlusion. CTA showed thrombosis in the R SVC just cranial to R atrium and distal to port catheter tip with multiple collateral vessels. IR consulted and started EKOS and heparin drip. The swelling getting worse causing tightness on the upper airways required intubation to protect upper airways.

High dose of steroid given, she required 6 d of mechanical ventilation before she improves. Patient counseled about OCP side effect.

Discussion CF patients more prone to thrombosis:

1-they have the chronic inflammation through innate and acquired immunity dysregulation, transcription factors signaling defect, as well as altered kinase and TLRs responses.

There are complex interactions between inflammation and hemostasis, involving proinflammatory cytokites, chemokines, adhesion molecules, tissue factor expression, plt and endothelial activation. Inflammation increases procoagulant factors, and also inhibits natural anticoagulant pathways and fibrinolytic activity, causing a thrombotic tendency.

2-Thrombosis associated with a CVC itself can be classified into: percuterather sheath (‘fibrin sleeve’), thrombotic occlusion of the catheter lumen, and mural thrombosis, either SVT or DVT. Insertion of CVC produces local venous injury at the access site. Deposition of fibrin on the thrombogenic catheter surface and the subsequent in-growth of smooth muscle and endothelial cells are universal and begin within hours of insertion. This percuterather sheath grows along the catheter from the venotomy site. Blood flow is reduced up to 60% around the CVC, leads to further cellular adhesion to the catheter

Abstract #345 Figure 1
and vein walls. Ongoing movement of the catheter within the vein produces endothelial erosions and triggers the development of mural thrombi, which encroach on the lumen until there is occlusion of the vein.

3-patient using OCP with Estrogen increase plasma concentration of clotting factors and increase the risk of thrombosis. Conclusion CF patients with CVC at risk for thrombosis and SVC syndrome, still not common but reported and can give similar picture of anaphylactic allergy.

OCP can give additional risk for thrombosis, better to avoid in CF patients.

#348 METHEMOGLOBINEMIA INDUCED BY ‘POPPER’: A CASE REPORT

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Background Methemoglobinemia is a blood disorder where red blood cells contain methemoglobin at levels greater than 1% leading to a hypoxic state. It can be either congenital or acquired. Illicit drugs referred to as “Poppers” or “RUSH” may contain amyl nitrate or isobutyl nitrite; they can be found over the counter to enhance sexual performance due to its vasodilator effects, anal sphincter relaxation, and aphrodisia. We report a cause of a male who developed methemoglobinemia secondary to “Popper” abuse.

Case presentation A 42 year old male with a past medical history of hypertension came to the emergency room complaining of headache, nausea, dizziness, shortness of breath, left leg numbness, and skin appearing blue for the last 6 hours. Prior to onset the man had inhaled a substance referred as “poppers”. During our first assessment he was hypoxicemic, his vitals HR: 120 bpm, RR: 20 rpm, BP: 128/95 mmHg O2 Sats: 88% on nasal cannula 6 liters. On the physical exam the patient was anxious, alert, and oriented in person, place, and time. Cyanosis was present on his palms and lips was found. Initial labs Hg: 17.2 g/dl WBC: 13.97 k/dl, PLT: 257 k/dl, K:3.3 MMOL/L, Cr:1.4 mg/dL. Arterial blood gases (ABG) were done, pH:7.51 pCO2:14.1 mmhg pO2:179.2 mmHg HCO3:12 MethHB:19.8%. The patient was diagnosed with methemoglobinemia as the cause of his acute hypoxicemic respiratory failure. He was started on methylene blue (MB) 1 mg/kg to infuse in 5 minutes. On assessment two hours after MB infusion, the patient required 2L NC to maintain an o2 sats of 94%, and cyanosis on his palms was absent. On directed questioning, the patient admitted to using poppers as a sexual enhancer. The next day his oxygen saturation normalized, and the patient was discharged with hospital follow-up in the internal medicine clinic.

Discussion “Poppers” as mentioned by our patient, are volatile nitrates that have been described to induce methemoglobinemia. Methemoglobinemia is suspected with unexplained cyanosis or hypoxia that does not resolve with supplemental oxygen as was found on our patient. A low oxygen saturation by pulse oximetry measured in patients with normal arterial blood gases can be an indication of methemoglobinemia, as it was found in our patient. Intravenous methylene blue is the first-line antidotal agent in cases of the total MetHB is above 30% or if the patient is symptomatic.

#349 MULTIFACTORIAL PRECIPITATION OF DIABETIC KETOACIDOSIS

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Introduction Diabetic Ketoacidosis (DKA) precipitants include infection, insulin omission (i.e. medication noncompliance or undiagnosed insulin dependent diabetes mellitus), medications and conditions increasing physiologic stress. Here we present a case of acute pancreatitis without hypertriglycerideremia complicated by Klebsiella pneumoniae bacteremia with severe DKA in an undiagnosed diabetic.

Case Report 29 y/o male with no past medical history presented to the Emergency Department with abdominal pain, lethargy and altered mental status. His temperature was 97.3 degrees F, heart rate 99 beats/minute, respiratory rate 29 breaths/minute, and blood pressure 84/42 mmHg. His blood pressure was unresponsive to 30 mL/kg IV fluid resuscitation, therefore Norpinephrine infusion was started for pressor support. His glucose was 983 mg/dL, Beta Hydroxybutyrate 7.35 mmol/L, arterial pH 7.23, pCO2 20.3 mmHg, bicarbonate 5.2 mmEq/L, lipase 399 u/L, triglycerides normal, undetected EtOH, potassium 6.3 mEq/L, creatinine 5.6 mg/dL, lactic acid 2.7 mmol/L and Hemoglobin A1c 11.6%.

Insulin infusion was initiated with continuous high-rate normal saline fluid. EKG showed normal sinus rhythm. CT of the head and abdominal US were unremarkable; however CT Abdomen/Pelvis w/o contrast showed peripancreatic inflammatory changes consistent with acute pancreatitis and findings of enterocolitis. He was treated with Vancomycin and Cefepime initially then deescalated to Cefepime monotherapy once blood cultures showed Klebsiella pneumoniae in 2/4 bottles. Clostridium difficile and stool PCR testing were negative.

As treatment continued, his labatory and clinical abnormalities resolved. Repeated blood cultures were negative and therefore he was discharged on oral Ciprofloxacin for 14-days to treat the bacteremia and oral Metronidazole for 10-days to treat the enterocolitis, respectively. He was also discharged on 27 units of Gargine nightly with 5 units of pre-prandial Aspart.

Discussion The patient met diagnostic criteria for DKA. We suspect the shock requiring pressor support was multifactorial from hypovolemia and sepsis. We suspect the Klebsiella pneumoniae bacteremia occurred due to the enterocolitis with pancreatitis, leading to bacterial translocation of gut flora. Although up to 25 percent of patients with DKA can have nonspecific lipase elevation, we suspect this patient had true pancreatitis because of the combination of significantly increased lipase > 3 times the upper limit of normal and radiographic evidence of pancreatic inflammation. In this case, the precipitants of DKA include infection (bacteremia), insulin omission and physiologic stress (acute pancreatitis).

Conclusion We present this case to remind the clinician that a single patient can simultaneously have multiple precipitants for DKA. It is the role of the clinician to explore these various causes to ultimately lower the risk future adverse events and to decrease morbidity and mortality.
IATROGENIC OPIOID WITHDRAWAL SYNDROME IN THE INTENSIVE CARE UNIT: A CASE REPORT

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Purpose of Study Describe possible iatrogenic opioid withdrawal syndrome in a mechanically ventilated and sedated COVID-19 patient.

Methods Used Case study

Summary of Results A 41-year-old man presented with acute hypoxic respiratory failure due to COVID-19 requiring mechanical ventilation and high dose sedation with fentanyl over several days. Past medical history included type 2 diabetes, hypertension, rheumatoid arthritis on immunosuppressive medications, gout, and morbid obesity. The patient received an IV fentanyl infusion over fifteen days of approximately 50,000 mcg of fentanyl IV. The patient had frequent episodes of hypertension, delirium, and agitation while weaning from this sedation protocol. The CAM-ICU score and vital signs were used to assess for possible opioid withdrawal. Post-extubation, he received fentanyl at 10 micrograms per hour for three days to limit withdrawal symptoms.

Discussion Approximately one-fourth of mechanically ventilated patients who received opioid infusions experience iatrogenic opioid withdrawal syndrome. Opioid withdrawal syndrome in an intubated and sedated patient can be challenging to identify. Classical diagnostic criteria outlined in the DSM-V include three or more of the following: dysphoric mood, nausea, vomiting, muscle aches, lacrimation, rhinorrhea, pupillary dilation, piloerection, sweating, diarrhea, yawning, fever, and insomnia. Relying on these symptoms in intubated and sedated patients with complex medical pathologies can confound the results of identifying and adequately treating Iatrogenic Opioid Withdrawal Syndrome. This case emphasizes the importance of judicious sedation in the intensive care setting and using bedside scales, such as the CAM-ICU score and autonomic changes in vital signs, to assess patients for withdrawal.

Abstract #351 Table 1  Fentanyl dose and bedside scales in the case subject

<table>
<thead>
<tr>
<th>Date</th>
<th>Fentanyl Dose (mcg)</th>
<th>Morphine Equivalent (0.1 Conversion Factor)</th>
<th>CAM-ICU Score</th>
<th>Vital Signs</th>
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<tr>
<td>08/30/21</td>
<td>665.4</td>
<td>66.5</td>
<td></td>
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</tr>
<tr>
<td>08/31/21</td>
<td>3,905</td>
<td>390.5</td>
<td></td>
<td>Negative</td>
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<tr>
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<td>430.7</td>
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<tr>
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<td>4,000.4</td>
<td>400.0</td>
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<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
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<td>49,425.8</td>
<td>4,942.6</td>
<td>4 Days</td>
<td>Positive</td>
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</table>

Case Report Granular cell tumors (GCT) are a rare benign neural tumor that is derived from Schwann cells. Most frequently it arises in tongue, breast, and skin. Pulmonary granular cell tumors are exceedingly rare, and only a handful of cases have been reported. In this article, we would like to present a case of 18-year-old lady with endobronchial GCT.

An 18-year-old lady with a medical history of well-controlled asthma, presented to pulmonary clinic with increased shortness of breath unresponsive to her usual dose of albuterol. Physical examination was unremarkable and vital signs were within normal limits. Chest X-ray did not show abnormal findings. Spirometry test was performed and revealed decreased peak flow that was irreversible with the use of inhaled bronchodilators, and flow volume loop consistent with upper airway obstruction pattern. Bronchoscopy was then performed which showed a white, polypoid, right upper lobe endobronchial lesion that was partially obstructing the airway. Lesion was completely excised, Endobronchial ultrasound (EBUS) with fine-needle aspiration (FNA) and endobronchial biopsy were also performed, and the histopathology demonstrated granular cell tumors, figure (1), with positive S-100. Chest Computed Tomography (CT) was clear from any nodule or abnormalities.

Granular cell tumors are exceedingly rare neoplasms and usually resemble other more common endobronchial lesions; most of cases are benign but a malignant form has a poor prognosis. Due to high recurrence rate, it is important for such lesions to be identified pre-operatively with tissue biopsy for a better long-term outcome and prognosis.
**Abstracts**


**TRANSUDATIVE CHYLOTHORAX IN THE SETTING OF LUNG MALIGNANCY**

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**Case Report** Chylothorax refers to chyle in the pleural space, which frequently arises from an interruption in the thoracic duct or reduced lymphatic drainage. Pleural fluid that is white/milky in appearance, with a triglyceride concentration of >110 mg/dL, strongly supports the diagnosis of chylothorax. Chylothorax is nearly always exudative. Transudative chylothoraces are extremely rare, and typically present due to a secondary cause, such as liver cirrhosis, nephrotic syndrome, or congestive heart failure. We present a case of transudative chylothorax that occurs in the setting of lung adenocarcinoma.

**Case Description** A 65-year-old male with a past medical history of right lung adenocarcinoma (S/P chemotherapy), recurrent left-sided pleural effusion (S/P PleurX catheter), and acute pancreatitis, presented to the emergency room (ER) complaining of dyspnea and palpitations with a HR of 180. There was no evidence of metastasis. He denied fever, orthopnea, and paroxysmal nocturnal dyspnea. He requires weekly draining of the left PleurX catheter. On physical examination, he had diminished lung sounds, worse on the right, without rales, crackles, or wheezes. His cardiac examination was unremarkable, without appreciable JVD. 2+ pitting edema was appreciated in the lower extremities, bilaterally, without obvious abdominal distention. Initial work-up revealed new-onset atrial flutter with 2:1 AV block. CXR revealed persistent total opacification of the right hemithorax, with a clear left lung field. LFTs were within normal limits, except for mildly decreased serum albumin of 3.0 L. Echo showed EF of 43%. Urinalysis was negative for nephropathy. IV Cardizem in the ER provided adequate rate control, and the patient was admitted to the ICU on a Cardizem drip. On day-2, the patient was switched to an Amiodarone drip, which resulted in cardioversion to NSR and the resolution of the patient’s dyspnea symptoms. CT-scan of the chest without contrast revealed moderate left pleural effusion, upper abdominal ascites, and a normal-sized heart. At this point, 650 mL of pleural fluid was drained via the left catheter. The fluid was white in appearance and analysis of the fluid was significant for elevated pleural triglycerides at 520 mg/dL, pleural/serum protein ratio = 0.41, pleural/serum LDH ratio = 0.26, and a total pleural LDH = 127 IU/L. A subsequent pleural fluid cytology revealed malignant cells consistent with adenocarcinoma.

**Discussion** Malignancy is the most common cause of non-traumatic, exudative chylothorax. Transudative chylothorax is extremely rare and has been described most commonly in association with liver cirrhosis, nephrotic syndrome, or congestive heart failure. The transudative chylothorax seen in our patient is likely due to metastatic left lung adenocarcinoma, with an unknown pathophysiology. To the best of our knowledge, transudative chylothorax associated with malignancy has not previously been reported in the literature.


**RARE CASE OF SARCOMATOID CARCINOMA PRESENTING AS AN ANTERIOR MEDIASTINAL MASS**

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10.1136/jim-2022-SRMC.350

**Case Report** Mediastinal masses are divided as either anterior, middle or posterior on the position of chest radiograph and show a wide variability in histological classification and frequency of neoplasm development. Sarcomatoid carcinoma is a rare tumor with a mixture of malignant epithelial components, differentiated mesenchymal cells, that also contain characteristics of true sarcoma or are composed in part or completely of sarcoma-like elements. This neoplasm can occur in diverse locations like the uterus, breast, thyroid, lung and upper gastrointestinal system. However, it represents an incidence of less than 10% of mediastinal tumors and approximately 1–2% of general malignancy, with only a few case reports found on literature, all requiring surgical resection as the more favorable survival method.

We present a case of a 77 year-old woman with history of HTN that was in her usual state of health being followed by her primary care physician due to complaints of persistent cough and dyspnea upon exertion, not resolving with medical management. Chest Xray sent by primary physician revealed an incidental mediastinal mass measuring 6.5 x 7.4 cm. Patient had no previous or family history of malignancy no weight loss and no constitutional B-symptoms. Physical examination was unremarkable. Laboratories only showed respiratory alkalosis by ABG’s. Given finding, chest CT performed showed an unexpected anterior mediastinal mass abutting the right atrium, ascending aorta and inferior vena cava, measuring 6.4 x 6.5 x 5 cm without calcifications. CT guided core needle biopsy was performed and was consistent with invasive mediastinal sarcomatoid carcinoma. Immunohistochemistry revealed positive keratin/myoepithelial markers (CAM 5.3, P40, CK903), vimentin, PHH3, PAX 8 and negative TTF-1, which are findings more compatible with thymic carcinoma, spindle cell (sarcomatoid) subtype, posing as a very unusual location of this type of tumor. Afterwards, patient was referred to Cardiothoracic surgery service and successful surgical resection was performed with complete resolution of symptoms.

Sarcomatoid carcinoma is a rare clinical entity that, if left untreated can result in potential life-threatening conditions. It can be located in various organs including the lung, however only few case report were found on literature. It is important to continue reporting this type of cases as overall survival is around 34% and local recurrence 64% on completely resected tumors. This demonstrate the importance of early identification and resection as early surgical resection is associated with more favorable survival.


**CHYLOTHORAX SECONDARY TO NEPHRECTOMY AND LYMPH NODE DISSECTION**


10.1136/jim-2022-SRMC.351

**Case Report** A 53 year old woman with a recent diagnosis of renal cell carcinoma status post left nephrectomy three weeks ago presented with a 1 week history of increasing fevers, chills, cough, and night sweats. On admission, her temperature was 102°F, white blood cell count was 22 K, and she was noted to have a diffuse pleural effusion on chest x-ray. Initial workup revealed negative blood cultures, WBC count of 10.7 K, with a normal absolute neutrophil count. Leukopenia and lymphopenia were noted with a CD4 count of 30. She was started on broad spectrum antibiotics and her fever trended downward to a temperature of 99°F. CT chest with contrast showed a large pleural effusion with adjacent necrotic lymph nodes. Resting pleural fluid analysis showed turbid yellow fluid. Subsequent pleural fluid cytology revealed malignant cells consistent with metastatic renal cell carcinoma. She was then referred to the transplant surgery service for further evaluation for potential liver transplantation.
prior presented to the Emergency Department with progressive shortness of breath. Immediately following surgery, the patient noted a milky-white discharge from the incision site which resolved after two days. Over the following two weeks the patient noted abdominal fullness and bloating followed by progressive shortness of breath that was worse with exertion and laying supine. Her exam was significant for increased work of breathing. There was absence of breath sounds and dullness to percussion on the right. No significant crackles or rales and no lower extremity edema were noted. JVP was estimated at 5 cm H2O. The patient was found to have an acute kidney injury with a BUN of 16 and creatinine of 1.96 (baseline 0.9). FENa was 0.7%. Complete blood count, electrolytes, and liver function were otherwise normal. BNP was 22. CXR showed dense opacification of the right mid/lower lung field concerning for pleural effusion. Bedside ultrasound revealed large volume ascites and right pleural effusion. Paracentesis and right thoracentesis removed approximately 3.5 L of white, turbid fluid. Fluid analysis from pleural fluid and ascites were similar. SAAG 0.6, WBC 189 with absolute neutrophil count of 4, RBC 7,888, Glucose 55, LDH 226, Protein 4.1, Triglycerides 3,945, Cholesterol 183. The patient was diagnosed with postoperative chylous ascites with transfer across the diaphragm leading to symptomatic chylothorax. The patient reported significant relief following fluid drainage.

Discussion

The differential diagnosis of white fluid on thoracentesis commonly includes chyle, cholesterol effusion, empyma, and leakage of tube feeds. Chylothorax is most often attributed to obstruction or trauma to the regional lymphatic system. Chylous ascites has been cited as the cause of chylothorax in as much as 8% of cases. In these cases, pancreaticcrectomy and cirrhosis of the liver are the most common cause of chylous ascites with few reported cases related to nephrectomy. It is important to consider chylous ascites as the cause of chylothorax in any patient with recent history of abdominal surgery.

Abstract #355

CHYLOTHORAX SECONDARY TO CHYLOUS ASCITES: AN UNCOMMON COMPLICATION OF PORTAL HYPERTENSION FROM CIRRHOSIS

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Case Report

A chylothorax is a rare condition that typically results from thoracic duct damage with chyle leakage from the lymphatics into the pleural space. Chylous ascites is also an uncommon condition that occurs as a result of disruption of the abdominal lymphatics, most commonly related to malignancy. We present a rare case of a hepatic chylothorax. A 62 year old male with known NASH cirrhosis presented to the Emergency Department with progressive dyspnea. A large, right sided pleural effusion was discovered on chest imaging. A diagnostic and therapeutic thoracentesis was performed with 3 liters of cloudy, yellow-tinged fluid removed. Fluid analysis revealed a transudate by Light’s criteria with elevated triglycerides of 215 mg/dL consistent with a chylothorax. Ascites was also discovered on computed tomography. A diagnostic paracentesis revealed cloudy, yellow tinged fluid. Fluid analysis revealed chylous ascites with elevated triglycerides of 219 mg/dL and an elevated serum albumin to ascites gradient (SAAG) consistent with portal hypertension. Fluid cytology, cultures, and stains were negative for malignant and infectious etiologies. Imaging was otherwise unremarkable. The etiology of the chylothorax was felt to be a hepatic hydrothorax from chylosum ascites as a consequence of cirrhosis. The patient was managed medically with diuretics to reduce ascites and a low salt, low fat diet was recommended. Despite conservative therapies, subsequent therapeutic thoracentesis and paracentesis were required due to fluid reaccumulation. The patient declined a Transjugular Intrahepatic Portosystemic Shunt (TIPS) procedure and somatostatin therapy. He is currently awaiting an evaluation for liver transplantation.

Abstract #356

EMPYEMA NECESSITANIS DUE TO ASPERGILLUS FUMIGATUS IN IMMUNOCOMPETENT

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Case Report

Empyema necessitatis is a rare complication of parapneumonic pleural effusion with an invasion of surrounding soft tissue of the chest wall, forming subcutaneous abscesses that can extend to the trachea, diaphragm, breast, esophagus, and pericardium. Aspergillus empyema necessitatis is a very rare complication of Aspergillosis.

Case presentation A 20-year-old immunocompetent male presented to the hospital with complaints of unintentional weight loss, fever, chills, and night sweats for 6 months. Chest CT showed right upper posterior pleural-based mass extending to the right paraspinal region and the anterior spinal region at T4-T5. CT-guided biopsy indicated abscess with vague
Abstracts

**#356** Figure 1

granulomas with central necrosis and fibrosis. An extensive work-up was performed with negative cytology for malignancy, and negative fungal, and mycobacterial stains. Kappa ISH and Lambda ISH showed a polyclonal population. The patient left against medical advice and started deteriorating again, leading to ER admission 6 weeks later. The medical team decided to pursue a surgical biopsy of the lesion during the second admission as the previous one was not diagnostic. The surgical biopsy revealed PAS-positive light green fungal elements in the abscess, and thick wet prep revealed hyphae and conidia suggestive of Aspergillus species. He underwent surgical debridement by cardiothoracic surgery of the abscesses. He was started on IV voriconazole 6 mg/kg every 12 hours and then switched to Voriconazole 200 mg BID followed by a daily dose of 200 mg for 6 months. The patient showed significant clinical improvement.

Discussion Our case suggests that Aspergillus fumigatus has the potential to cause empyema necessitatis along with parenchymal involvement. However, it usually happens in immunocompromised patients due to an acquired immunodeficiency in chronically symptomatic patients rather than a superimposed infection with rare occurrence among immunocompetent adults. Therefore, it is essential to be vigilant about early diagnosis and treating patients with Aspergillus empyema to avoid poor outcomes.

**#357** NON-TRAUMATIC NON-IATROGENIC CHYLOTHORAX

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10.1136/jim-2022-SRMC.354

Case Report Spontaneous non-traumatic thoracic duct leak or injury, a rare cause of high output chylothorax

Case presentation A 70 years old female with a medical history of hypertension, diabetes mellitus was admitted for shortness of breath, back pain, and cough worsening in the last two months. Her physical examination showed right-side rhonchi and +2 bilateral pedal edema. CT angiogram showed III-defined opacities involving both lungs, primarily the right middle lobe and lower lobe with massive right-sided pleural effusion, no evidence of PE and small gastric varices. A rightsided chest tube was placed draining about 3 L of creamy fluid, and chemistry showed triglycerides above 300 suggestive of chylothorax, Sudan III stain, and chylomicrons confirming the finding. Pathology of the fluid was negative for malignancy, fibrinoid material with small number of benign mesothelial cells. The patient also presented with nephrotic range proteinuria, and renal biopsy showed secondary changes from diabetic nephropclerosis. She was administered octreotide infusion with a low-fat diet and possible workup for secondary causes of chylothorax, including serum, urine electrophoresis for multiple myeloma, MRI spine, EGD, TB gold testing, and immunological workup yielded negative results. There was an initial improvement in chest tube drainage; subsequently, her drainage was significant. An ultrasound-guided lymphangiogram showed an irregular appearance of the thoracic duct over the level of the hilum with suspected injury at the level of the carina and peribronchial channels; thoracic duct glue embolization was attempted. Chest drain completely stopped for the next three days. However, on day four started to drain, increasing milky fluid through the chest tube. Hence, bedside pleurodysis with doxycline and removal of chest tube was done. The follow-up serial chest imaging showed no pneumothorax and stable small bilateral pleural effusions with hazy bilateral atelectasis with clinical improvement in her oxygenation and was discharged to rehabilitation.

Discussion This presentation of chylothorax is the non-traumatic, non-iatrogenic type with leaking in the lymphatic pathway at the thoracic duct over the level of the hilum, possibly from impeded flow caused by tearing or injury due to raised pressure from violent coughing and nephrotic syndrome from diabetic nephropclerosis as a differential. A failure in glue embolization needs to be treated with pleurodesis. Nevertheless, the attribution of a chylothorax to an idiopathic etiology requires a complete patient evaluation and careful follow-up to exclude an underlying occult etiology.

Conclusion Chylothorax is a condition that needs to be taken seriously: a patient who persistently loses chyle will be losing considerable amounts of fat and fat-soluble vitamins, proteins, electrolytes, immunoglobulins, and T-lymphocytes, with resulting malnutrition and an impaired immune system at risk of septicemia.

**#358** OBLIGATION TO SUBTYPE PULMONARY ARTERY HYPERTENSION

B Mohanakrishnan*, OH Al-Jobory, SA Tanami, T Vo. Texas Tech University Health Sciences Center, Amarillo, TX

10.1136/jim-2022-SRMC.355

Introduction Pulmonary hypertension affects individuals of all ages, races, and gender. The disease is characterized by elevated mean pulmonary artery pressure ≥20 mmHg at rest with a pulmonary vascular resistance ≥3 Wood units measured by right heart catheterization. World Health Organization classifies, PH into five groups based upon etiology. However, because of the broad classification and multiple etiologies (figure 1), obtaining accurate estimates of the prevalence of PH and its different forms, including PAH, has been challenging.

Case presentation A 53-year-old non-smoker female with a medical history of pulmonary hypertension type 1, autoimmune hepatitis, nonalcoholic liver cirrhosis, CHF, and CKD Stage IIIb diagnosed six months ago presented with worsening generalized edema and increasing shortness of breath on minimal exertion. Her home medications were sildenafil 20 mg TID, and furosemide 40 mg started at the diagnosis of PAH Type I. On examination, tachypnea maintains an oxygen
saturation of 91 on room air, MAP 80, and anasarca up to the umbilical level. CT chest showed multifocal subpleural ground-glass opacities and subtle areas of subpleural reticular opacities. TTE showed EF 50–55% with LV diastolic dysfunction grade 1, severely enlarged RV/RA, moderate tricuspid regurgitation with RVSP of 92.53 mmHg, LA an LV appeared normal and small pericardial effusion without tamponade. The well’s score for PE was 3.0, and her D-Dimer was elevated to 3.82 with moderate risk for PE. Ventilation-perfusion scan and lower extremity venous doppler showed multiple large bilateral pulmonary perfusion defects with high probability exam for pulmonary embolism and noncompressible, occlusive deep venous thrombosis of common femoral, right femoral, right saphenous, right popliteal, and right posterior tibial veins. The patient's respiratory condition further deteriorated by this time. She was in an obstructive shock state, received t-PA with no improvement, and opted for inpatient hospice care.

Discussion
This middle-aged woman with no major risk factors or familial predisposition had a short course from the diagnosis of the disease to aggravated worsening of illness despite treatment, does evoke the discussion of possible Type IV disease from chronic thromboembolic disease rather a Type 1 Pulmonary Hypertension from idiopathic causes. In addition, Type 1 Pulmonary hypertension is a diagnosis of exclusion, and no records for excluding chronic thromboembolic disease were found at initial diagnosis.

Conclusion
We conclude that differentiating the etiology of pulmonary hypertension is the most crucial step in determining the management approach. An effort to differentiate the subtype of pulmonary hypertension from careful history, diagnostic test including right heart catheterization and polysomnography with determining the stage of right heart failure at presentation. The treatment of the underlying pathophysiology of the disease with appropriate

1#359 SPONTANEOUS PNEUMOMEDIASTINUM IN POST-COVID SYNDROME

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10.1136/jim-2022-SRMC.359

Learning Objective
Pneumomediastinum possible sequelae of post-COVID presentation with minor COVID infection

Case presentation
A 42-year male with Covid-19 pneumonia presented following an episode of syncope with associated severe weakness and hemoptysis. The patient had Covid-19 pneumonia two months earlier and needed no hospitalization. At this presentation, he tested negative for Covid-19, with a 30-pound diet-related weight loss, brain fog, occasional shortness of breath, and night sweats since his infection. Respiratory rate 23/minute, occasional wheezing. Besides normal hemoglobin, WBC 12.7 with elevated ANC, normal electrolytes except slightly elevated chloride, D-Dimer of 0.85, ferritin of 907.8, CRP of 19.6, normal BNP, and normal troponin. Chest CT demonstrated ground-glass opacities, small anterior pneumothoraces, and moderate pneumomediastinum with a cystic lesion in the right upper lobe that may reflect a pneumatocele. Head CT and EKG were unrevealing. He was managed conservatively with breathing treatments and cough suppressants. The patient complained of neck pain the next day, and a repeat chest x-ray revealed subcutaneous emphysema in the neck area. Despite this, the patient had no further clinical manifestations during his hospital stay with stable pneumomediastinum and pneumothorax on follow-up chest x-rays with a reduction in subcutaneous neck emphysema. He denied repeat episodes of hemoptysis or presyncope and was subsequently discharged three days after admission with a follow-up chest x-ray in two weeks.

Discussion
Post-Covid complications including cough, dyspnea, and pulmonary fibrosis may contribute to alveolar barotrauma and subsequent pneumomediastinum, which may contribute to serious complications, including cardiac tamponade. Pneumatoceles are air-filled cavitary lesions usually seen post-infection, trauma, or more extensive cystic disease of the lung. The evolution happens post pneumonia, inflammation, and narrowing of the bronchus leads to the formation of an endobronchial ball valve, leading to the distal dilatation of bronchi and alveolar space. The obstruction is thought to be caused by inflammatory exudates in the airway lumen, permitting air to enter the cystic space but not to leave it. Subsequent enlargement of the pneumatocele occurs either due to pressure from the adjacent pneumatocele or intraluminal inflammatory exudates.7 This case demonstrates the need to consider pneumomediastinum as a complication even in non-serious Covid infections with no acute hypoxic respiratory failure presentation.

Conclusion
Many case reports have detailed spontaneous pneumomediastinum in patients with active Covid-19 pneumonia, especially in intubated patients. Few publications have linked pneumomediastinum to post-Covid pneumonia. Pneumomediastinum should be an important consideration in patients with active Covid-19 and those who have recovered from even minor infection.

#360 CULTURE-NEGATIVE SEPTIC SHOCK-A DIAGNOSTIC DILEMMA

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10.1136/jim-2022-SRMC.357

Case Report
The majority of patients presenting with shock have an identifiable etiology and character, however a small subset remains undifferentiated. The diagnostic evaluation of undifferentiated shock is aimed at systematically excluding etiologies of each subtype of shock. When systematic evaluation excludes anaphylactic, septic, cardiogenic, and hypovolemic shock, invasive evaluation with right heart catheterization (RHC) may provide crucial evidence. The high incidence of culture negative septic shock is multifactorial. Possible factors include atypical viral or fungal infectious etiologies and notably unreported antibiotics administration at local clinics prior to obtaining appropriate cultures.

A 19-year-old female with no past medical history presented with acute epigastric pain, associated with nausea and vomiting. On evaluation the patient was unwell, febrile, tachycardic, tachypneic and hypotensive requiring vasopressor support. With no clear etiology of her presentation, she was admitted to the ICU for evaluation of undifferentiated shock. She was pan-cultured and received broad spectrum antibiotics. Initial labs, cultures, urine analysis and chest X-ray were unrevealing. CT chest, abdomen and pelvis returned normal further excluding septic or obstructive shock such as acute pulmonary
embolism. EKG and echocardiogram were within normal limits eliminating cardiogenic shock from the differential.

Right heart catheterization was consistent with high-output vasodilatory shock. Blood cultures and urine cultures failed to identify an infectious source of her shock. The patient was managed for culture negative septic shock with broad spectrum antibiotics.

RHC was consistent with septic shock, which carries a high risk of morbidity and mortality. Management of septic shock is guided by hemodynamics and directed at source control with identification of the culprit organism and administration of targeted antibiotic therapy. In 28–49% of individuals with septic shock, the underlying infectious source remains unknown. One retrospective observational study of ICU patient with septic shock revealed 41% of the patients were culture negative. It is important to evaluate each type of shock as they may not occur independent of each other. This case highlights that patients with culture negative septic shock, early initiation of antibiotics and pan-culturing to establish an infective source remains the cornerstone of management and the most effect strategy to improve hospital survival.

Conclusion POS can be important clinical sign towards the diagnosis in ILD patients when there is sudden deterioration in respiratory status.

Case Report Inhaled marijuana has been associated with respiratory symptoms like chronic cough, sputum production, dyspnea and hoarseness and infrequently identified as a potential risk factor for the development of spontaneous pneumomediastinum (SPM).

Case presentation A 23-year-old freedom-impaired man with schizophrenia, seizure disorder presented to the hospital for altered mental status. He had a history of seizure in the facility and was loaded with Keppra in hospital. Vitals were stable. Physical examination revealed Hamman’s sign over the chest. Labs were unremarkable. Urine drug screen was positive for marijuana. Psychiatric examination revealed uncooperative, flat affect and impaired judgement. Given history of psychiatric disorder levetiracetam was switched to phenytoin by neurology. Electroencephalography (EEG) does not show epileptiform activity. CXR revealed pneumomediastinum (figure 1). CT scan whole body trauma protocol showed pneumomediastinum, retroperitoneal air, and subcutaneous emphysema (figure 1). General surgery was consulted. An esophagogram was done. The study was negative and esophageal perforation was ruled out. Patient continued to have pneumomediastinum on day 3. Gastroenterologist was consulted but an esophagogastroduodenoscopy (EGD) could not be done due to patient’s inability to consent. Patient was sent back to facility after optimizing psychiatric medications.

Discussion The incidence of SPM is reported between 0.001% and 0.014% of hospitalized patients and is more common among young adult males. In our case history could not be elicited about the mechanism of marijuana use but it remained the most likely cause and the patient remained asymptomatic.

Abstract #362 Figure 1 A) Chest X-ray showing pneumomediastinum (white arrow); B) Computed tomography (CT) body trauma showing extensive subcutaneous emphysema (blue arrow), pneumomediastinum (white arrow) and retroperitoneal air in the abdomen. There is trace left pneumothorax.
ALLERGIC BRONCHOPULMONARY ASPERGILLOSIS (ABPA) REPEATEDLY MISDIAGNOSED AS ASTHMA EXACERBATION DUE TO MEDICATION NONCOMPLIANCE

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Case Report Allergic bronchopulmonary aspergillosis (ABPA) results from a hypersensitivity reaction to Asperillus Fumigatus colonization of airways in patients with asthma or cystic fibrosis (1,2).

Our patient is a 47-year-old female with a history of asthma and noncompliance to medications who presented with frequent asthma exacerbations. She required intubation three times within six months, which was labeled as asthma exacerbation due to noncompliance, until finally diagnosed with and successfully treated for ABPA, resulting in resolution of frequent admissions.

We used the diagnostic criteria by the International Society for Human and Animal Mycology (ISHAM)(3).

Our patient was asthmatic, had elevated A. Fumigatus specific and total IgE, central bronchiectasis on chest imaging, and elevated total eosinophil counts during previous admissions before she received steroid treatment, meeting the diagnostic criteria for ABPA.

Conclusion This case illustrates the importance of maintaining a high index of suspicion for ABPA in recurrent asthma exacerbation even in the setting of medical noncompliance.

REFERENCES

Abstract #364 Figure 1 Dilated central airways seen in ABPA (arrow)

Abstract #364 Table 1 Lab findings of the patient supporting the diagnosis of ABPA

<table>
<thead>
<tr>
<th>Lab Test</th>
<th>Result</th>
<th>Reference</th>
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<tr>
<td>A. Fumigatus IgE</td>
<td>0.93kU/L</td>
<td>0.3kU/L</td>
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<tr>
<td>Total IgE</td>
<td>1804U/mL</td>
<td>1000U/mL</td>
</tr>
<tr>
<td>Total eosinophil count</td>
<td>&gt;500 cells/μL</td>
<td>500 cells/μL</td>
</tr>
</tbody>
</table>

DISCREPANCY BETWEEN FINGER PROBE SPO2 READINGS WHEN PLACED ON FINGER VS FOREHEAD


10.1136/jim-2022-SRMC.361

Case Report A 25 year old woman, G3P2 at 23w6d presented to the Emergency Department for one week of progressive cough and shortness of breath. Patient was febrile, tachypnic, with oxygen desaturation to 88% with minimal exertion. Chest radiograph showed bilateral airspace disease consistent with viral pneumonia. The patient was diagnosed with covid-19 and admitted for acute hypoxic respiratory failure secondary and started on dexamethasone and remdesivir. The patient subsequently had escalating oxygen requirements and was stepped up to the ICU on BIPAP on hospital day two. Her oxygen requirements gradually improved, and she was stepped down to the floor on day 8 of admission on high-flow nasal cannula. The following day, the patient was noted to have oxygen saturation of 97% on room air with a disposable finger probe applied to the forehead. Placement of the finger probe on the forehead is an uncommon practice reserved for use when unable to obtain adequate wave-form on the finger. A separate evaluation that day using a disposable finger probe on the finger revealed markedly different oxygen saturation in the low 90’s. Confirmatory ABG showed pH 7.46, pCO2 31, O2 48, and HCO3 22. After determining hypoxemia, we placed disposable finger probes on both the finger and forehead at the same time using two separate machines. The probe on the forehead showed an spO2 consistently 10% higher than the reading on the finger. The probe connectors were switched and continued to show a 10% higher reading on the probe attached to the forehead. Discussion Given the hypoxemia confirmed on ABG, we concluded that the disposable finger probe used on the forehead provided a falsely elevated spO2 reading. One small study comparing disposable finger probes on the finger vs the forehead showed a discrepancy of >5% in over half of the patients. Critical management decisions are made based on the spO2, and inaccurate readings pose significant risk to the patient. Use of disposable finger probes on the forehead should be avoided.

COLLABORATING TO HELP EVERYONE EFFECTIVELY RECOVER: A PEDIATRIC ICU INITIATIVE

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Abstracts

Purpose of Study It has long been the routine for pediatric intensive care units (PICU) for intubated critically ill children to be heavily sedated. Emerging literature in the pediatric world has demonstrated that bundled interventions for restorative activities are safe and feasible and likely provides benefits.
for both short- and long-term outcomes. Previous studies by Choong et al, who did a retrospective analysis of different barriers of established PICU mobility programs, identified the most common barriers to be the need for physician orders, insufficient equipment, lack of practice guidelines, provider champions, and pediatric sedation protocols.

What is unique to our project is the multidisciplinary approach, which includes physicians, nurses, physical and occupational therapists, pharmacists, and child life specialists.

This project aims to help set future endeavors up for success by determining perceived barriers to implementing earlier interventions for critically ill pediatric patients and if surveys should be provided at different institutions prior to implementing programs such as this one.

Methods Used A survey was sent out to the medical teams from the PICU, Neuro ICU, and IMCU to determine what potential barriers they identify. These results were then broken down by location and medical team member type.

Summary of Results 63% of staff members surveyed did not feel like critical care patients are appropriately mobilized. 55.1% of staff felt comfortable mobilizing ventilated patients. The perceived top five barriers were limited nursing staff, limited respiratory therapist, ECMO, instability of the heart or circulation, and equipment knowledge/comfort. These perceived barriers also differed depending on staff position and unit. While the IMCU and PICU’s biggest concern was limited nursing, the neurosurgical ICU was equally as concerned with the patients being on ECMO as limited nursing availability. The CVICU differed from the other units in that their biggest perceived barrier was cardiovascular instability.

Conclusions These potential barriers differ between established PICU programs. At LeBonheur Children’s Hospital, we identified the barriers to be limited nursing staff availability, limited RT availability, and patients being on ECMO. This shows that each institution has its own perceived barriers to institute early ICU mobility, thus barrier surveys should be performed to determine the institution-specific needs.

#367 RECURRENT PULMONARY EMBOLISM IN A PATIENT WITH ANTI-PHOSPHOLIPID ANTIBODY SYNDROME: A THERAPEUTIC CHALLENGE
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10.1136/jim-2022-SRMC.367

Case Report A 62-year-old woman with APLA, provoked DVT, subsegmental PE, group 4 pulmonary hypertension, chronic hypoxic respiratory failure and hypertension, presented with dyspnea, hypotension, and generalized weakness. She had acute kidney injury which precluded any contrast imaging studies. Prior workup showed elevated 62 glycoprotein and anti-cardiolipin antibodies but was negative for autoimmune diseases or malignancy. She was initially on apixaban for anticoagulation and later transitioned to enoxaparin due to suspected progression of PE.

During this hospital admission, she was in cardiogenic shock due to massive PE. Transthoracic echocardiography showed positive McConnell’s sign, moderate pericardial effusion, moderate tricuspid regurgitation, and severe pulmonary hypertension. She was placed on a heparin drip and treated with an intravenous tissue plasminogen activator (TPA).

Due to persistent hemodynamic instability, she required dobutamine and inhaled nitric oxide. She received a second dose of TPA and underwent thrombectomy and inferior vena cava filter placement. After surgery, her hemodynamic status and oxygen requirements improved. She continued on heparin drip for anticoagulation until hemodynamically stable and was transitioned to oral warfarin.

Recurrent DVT and PE is a known complication of APLA. Up to 20% of patients with APLA may have DVT. A recent cohort study found that 17.7% of patients may have recurrent thrombosis despite anticoagulant treatment. A positive APLA test predicts an increased risk of recurrence of DVT, as was observed in our patient who had positive 62 glycoprotein and anti-cardiolipin antibodies. Besides DVT, APLA also predisposes to increased risk of arterial thrombosis, prophylaxis for which is done with aspirin in asymptomatic patients. For DVT prophylaxis, warfarin remains the treatment of choice in high-risk patients.

Recurrent DVT and PE in the setting of APLA pose a significant therapeutic dilemma. Adequate anticoagulation is the cornerstone to prevent a recurrence. Despite anticoagulation, sometimes surgical intervention, such as thrombectomy, is needed.

#368 BLASTS IN PLEURAL FLUID: A CLUE TO DIAGNOSE ACUTE MYELOID LEUKEMIA
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10.1136/jim-2022-SRMC.364

Purpose of Study The purpose of the study is to associate blasts in the pleural fluid and the diagnosis of asymptomatic acute myeloid leukemia (AML).

Method Case Study
Summary of Results Leukemic infiltration into pleural fluid as a manifestation of AML is incredibly rare and not fully understood. Here we present a case of a 62-year-old Caucasian woman with diabetes, hypothyroidism, asthma, and hypertension who presented to our hospital with worsening cellulitis. She was noted to be hypoxic and hypotensive with an oxygen saturation of 66% on room air; she required non-invasive ventilation and intravenous fluid for resuscitation. Respiratory examination revealed decreased breath sounds and dullness on percussion of the right lung. Chest x-ray showed multifocal opacities with bilateral pleural effusions. The following day, the effusion significantly increased with total opacification of the right hemithorax. Thoracocentesis was performed to improve her oxygenation. Serosanguinous fluid with numerous blasts were found in the pleural fluid consistent with leukemic exudative effusion (pleural LDH 2,851 U/L, protein 2.5 g/dL, glucose 151 mg/dL). Her CBC showed WBC 186.8k/ml with blasts of 74.1%, Hb 6.6 g/dL, Platelet 441k/ml. Her baseline WBC was 4.47k/ml in 2020. Bone marrow aspiration showed 72% blasts. Flow cytometry showed blasts that expressed CD13, CD33, CD34, CD45, CD 64, CD88, CD 117, and HLA-Dr. Computed tomography of the thorax revealed a right pleural effusion with loculations and reactive mediastinal lymphadenopathy.

She underwent leukapheresis which was complicated by tumor lysis syndrome. She developed shock which required vasopressors and multiple blood transfusions. Given her critical
Abstracts

Abstract #368 Figure 1  Blasts in the pleural fluid (Thinprep)

Abstract #369 Figure 1

were performed by the cardiothoracic surgeon. Vitamin D was low (13.6 ng/ml) but Dexa scan showed normal bone mineral density. He was also seen by ENT who noted left posterior vocal cord lesion with reactive right vocal cord nodule on direct laryngoscopy. Voice therapy and pantoprazole were recommended with follow up.

Cough-induced rib fractures can occur in the presence of risk factors; however, it is distinctly uncommon in the absence of these risk factors. Nonetheless, workup is necessary to identify potential risk factors in order to prevent future recurrences.

#369
MULTIPLE COUGH-INDUCED RIB FRACTURES IN A PATIENT WITHOUT RISK FACTOR
S Tasnim*, D Dave, JP Varghese, SA Tanami, T Naguib. Texas Tech University Health Sciences Center, Amarillo, TX
10.1136/jim-2022-SRMC.365

Case Report Cough is a normal physiological response to any irritant in the airway. It is usually harmless but forceful and paroxysmal cough can cause complications such as pneumothorax, herniation, syncpe, or incontinence. Rib fracture secondary to cough is a rare entity. Most of the cases reported so far were in the presence of pathological factors like osteoporosis, malignancy, or renal disease. In the absence of any of these risk factors, rib fracture involving multiple ribs is an unusual incidence.

We present a 51-year-old male with hypertension who was admitted for severe left sided chest pain and persistent cough. He denied any recent fall, weight loss, fever, or chills, and smoked transiently as a teenager but denied alcohol and substance abuse. He was hemodynamically stable with normal blood counts and chemistry panel. Troponin was negative and EKG showed sinus tachycardia with premature atrial complexes. CT showed relatively large left sided hemithorax, displaced fractures of left posterolateral 5th-8th ribs. Left side chest tube was placed, and the patient underwent bronchoscopy that noted small mucous plugs and tan to red firm foreign material. Broncho-alveolar lavage culture grew group C beta hemolytic streptococci, and IV ceftriaxone was started. When chest tube was removed, he was discharged on oral antibiotics. A month later, he returned due to persistent cough and expanding hemithorax. Decortication and rib plating medical condition, she was given less intense chemotherapy using azacitidine and venetoclax.

Patient was transferred to MD Anderson Cancer Center in Houston, Texas, for further management.

Conclusion Pleural effusion can be a common manifestation in hematologic malignancy. However, leukemic infiltration of pleural fluid as a manifestation of acute myeloid leukemia is incredibly rare and not fully understood. This case showed the importance of pleural fluid analysis and cytologic studies to make a diagnosis in a patient who had no prior diagnosis of hematologic malignancy.

#370
A CASE OF INFECTIOUS ENCEPHALITIS IN THE SETTING OF PESTICIDE EXPOSURE
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10.1136/jim-2022-SRMC.366

Case Report Although the diagnosis and management of meningoencephalitis seems straightforward in the guidelines, following the guidelines is not always possible in the setting of alternative diagnosis or if immediate empiric treatment is warranted due to hemodynamic instability prior to definitive diagnosis.

We present a 65-year-old male with hypertension, type 2 DM, and dyslipidemia, who was admitted with altered mental status. Four days earlier, he was using a new pesticide with active ingredient of Flupyradifurone which is a systemic nicotinic acetylcholine receptor agonist. After that, he developed runny nose, itching eyes, nausea, vomiting, watery diarrhea followed by fever, photophobia, restlessness, and confusion. On presentation, he was hypertensive and tachycardic with fever of 101.2°F. His oxygen saturation was normal in room air, but he had flushed facies, urinary retention, and diminished bowel sounds. WBC count was elevated as were the inflammatory markers and procalcitonin. CT scan of brain was negative for acute intracranial process. He was promptly
started on empiric antibiotic coverage for viral and bacterial encephalitis with vancomycin, ceftriaxone and acyclovir. Poison control was unable to provide data about the pesticide. After 2 days, he was intubated for acute hypercapnic respiratory failure and airway protection. LP was possible under sedation and CSF analysis showed glucose of 165 mg/dL, protein of 81 mg/dL, pleocytosis of 42 cells/μL with lymphocytic predominance of 89%. He had negative markers for viral and bacterial infection panel, but throat culture grew Group A beta hemolytic streptococcus. A partially treated bacterial meningoencephalitis was diagnosed based on CSF findings and procalcitonin levels, and acyclovir was discontinued. After 4 days, he was extubated and his mentation markedly improved. He was discharged home to complete 14 days course of IV ceftriaxone.

Although bacterial meningoencephalitis was evident, the diagnosis was delayed due to the red herring of possible toxic toxicity, barotrauma, or vasospastic ischemia. Other possibility of differential cell count conversion from polymorphonuclear neutrophil leukocyte predominance to relative lymphocytosis 48 to 72 hours after initiation of parenteral antibiotic therapy. However, elevated procalcitonin and subsequent decline of level with antibiotic therapy that paralleled mental status improvement finally suggested bacterial whether meningial or parameningeal infection. Therefore, initial broad medical management with subsequent de-escalation based on test results and treatment response was key to life saving approach.

Physicians should remember the paramount importance to promptly initiate antimicrobial therapy in meningoencephalitis when a delay of CSF sample procurement takes place even when the initial evaluation may suggest a toxic non-infectious etiology.

Case Report While the COVID-19 pandemic killing millions world-wide, definitive therapy is not yet available. However, vaccines were shown to effectively reducing COVID-19 related mortality. Side effects of COVID vaccination include thrombosis. Most of the vaccine-related thrombosis took place after the Oxford-AstraZeneca and Johnson & Johnson vaccines. Our case, however, developed thrombosis after receiving the Moderna mRNA vaccine.

A 62 y/o female with hypertension and paroxysmal atrial fibrillation had retroperitoneal hemotoma thought to be due to an aneurysm posterior to the pancreatic head and underlying embolization. Following this, she developed bilateral pulmonary embolism (PE) secondary to iliac vein thrombosis which was thought to be a direct result of compression from the hemotoma. She was started on anticoagulation (rivaroxaban) at that time and monitored closely for possible bleeding. Unfortunately, she stopped rivaroxaban after one month due to financial reasons.

A year later, the patient presented to the hospital with chest tightness for 3 days, one week after she took her 2nd dose of Moderna vaccine. 2 days later, she started having left-sided chest tightness and dizziness. She has no family history of clotting disorder, recent surgery, and has no known malignancy. On admission, she was hemodynamically stable with normal oxygen saturation in room air. Blood work showed normal platelet count and coagulation panel. CT angiogram of the chest showed PE in the right middle lobe segmental branch without right ventricular strain. She did not have troponin elevation or EKG changes. Apixaban was initiated through a financial assistance program on discharge.

Although vaccine-related thrombosis remains at the top of the differential diagnosis for our patient, a history of prior thromboembolic event a year earlier and lack of adherence to anticoagulation may have enhanced this lady’s resurgence of thrombosis. Having a high degree of suspicion following COVID vaccination is always important to make an early diagnosis and prevent serious consequences of thromboembolism. It is possible that the immune-modulatory effects of the mRNA vaccines can enhance the recurrence of thrombosis in persons with previous history of the condition.
Unfortunately, she stopped rivaroxaban after one month due to fibrillation having retroperitoneal hematoma thought to be due to a clotting disorder. Our case, however, developed thrombosis after receiving the Oxford-AstraZeneca and Johnson & Johnson vaccines.

### Case Report


When the initial evaluation may suggest a toxic non-infectious encephalitis, initial broad medical management with antibiotics was initiated through a financial assistance program on March 30, 2022 by guest. Protected by copyright. http://jim.bmj.com/ J Investig Med: first published as 10.1136/jim-2022-SRMC on 25 January 2022. Downloaded from

Although vaccine-related thrombosis remains at the top of the list, new reports continue to emerge. It is possible that the immune-modulating effect of vaccines can trigger an immune response leading to thrombosis. The best approach is to have an early diagnosis and prevent serious consequences of thromboembolism. It is always important to make an early diagnosis and prevent serious consequences of thromboembolism.

### Abstract #371 Figure 1

Equipment used per unit on day shift.

- **IMCU**: ICU mean and median LOS were 49.5 and 13.5 days. 16.7% received continuous sedation (2.8% opioids, 11.1% benzodiazepine, 8.3% dexamethasone, 2.8% ketamine) and 5.6% used antipsychotics. Delirium scores were reported in 61.1% (IMCU 72.7%, PICU 58.8%, CVICU 50%). 31.8% reported delirium. 44.4% had PT/OT consults and were mechanically ventilated, 5.6% were on vasoactive medications. ICU mean and median LOS were 49.5 and 13.5 days. 16.7% received continuous sedation (2.8% opioids, 11.1% benzodiazepine, 8.3% dexamethasone, 2.8% ketamine) and 5.6% used antipsychotics. Delirium scores were reported in 61.1% (IMCU 72.7%, PICU 58.8%, CVICU 50%). 31.8% reported delirium. 44.4% had PT/OT consults and were mechanically ventilated, 5.6% were on vasoactive medications.

### Purpose of Study

The culture of immobility in pediatric critical care patients prompted a quality improvement project encouraging early mobility and ICU liberation in a tertiary PICU. Aims were designed around evaluating trends in mobility and associated ICU liberation strategies with a focus on process improvement and improved adherence to current practices regarding increasing levels of early mobility and the assumption that this practice can improve outcomes. Emerging literature in the pediatric world has provided indications that increased levels of mobility can decrease patient morbidity and increase quality of life like that of the adult patient population.

### Methods

Surveys about patient care were distributed to the day and night shift nursing teams, creating a baseline snapshot of the current states of mobility in the PICU, IMCU, and CVICU. For the study, we described baseline patient characteristics, mobility efforts, barriers to early mobility, delirium levels, sleep disturbances, family engagement, and overnight benzodiazepine and opiate use.

### Summary of Results

43 patients with 77 encounters were identified in IMCU (14), PICU (21), and CVICU (8). Patient ages ranged between 0–18+ with 17/43 patients aged 0–1 year. 36 patients were identified on the day shift, 44.4% were mechanically ventilated, 5.6% were on vasoactive medications. ICU mean and median LOS were 49.5 and 13.5 days. 16.7% received continuous sedation (2.8% opioids, 11.1% benzodiazepine, 8.3% dexamethasone, 2.8% ketamine) and 5.6% used antipsychotics. Delirium scores were reported in 61.1% (IMCU 72.7%, PICU 58.8%, CVICU 50%). 31.8% reported delirium. 44.4% had PT/OT consults and were mechanically ventilated, 5.6% were on vasoactive medications.

### Case Report

A 62 y/o female with hypertension and paroxysmal atrial fibrillation had retroperitoneal hematoma thought to be due to a clotting disorder. Patient was intubated for Video assisted thoracoscopic surgery and biopsy but could not be done due to worsening respiratory status.

Based on presentation and investigation findings, diagnosis of Cocaine induced Organizing pneumonia was made. Tapered steroid therapy was added with dexamethasone initial dose of 6 mg then methylprednisolone 125 mg. Patient recovered well, extubated on day 13, switched to oral prednisone and discharged home on room air.

### Discussion

Cocaine is an alkaloid with anesthetic properties that is administered through different routes; inhaled, IV injections, or smoked after chemical modification ‘crack’. It may be smoked through different types of pipes or mixed with cigarettes or marijuana.

Mechanism of cocaine induced lung injury is thought to be due to inflammatory damage, thermal injury, direct cellular toxicity, barotrauma, or vasospastic ischemia. Other possibility in our patient is Smoking in aluminium foil which has food oil substances, and none stick substances can make them toxic when inhaled.

Cocaine induced organizing pneumonia with respiratory failure has been reported in young cocaine smokers. Organizing pneumonia BAL cell count has increase in lymphocyte (20–40), neutrophile (5–10) and eosinophile (5–25) with the level of lymphocyte being higher than eosinophile is typical but not diagnostic for COP.

### Conclusion

Cocaine induced organizing pneumonia secondary to cocaine or aluminum foil with typical presentation, radiology imaging, BAL cell count findings and excluding other causes may be diagnosed without the need of lung biopsy.

### EARLY MOBILITY IN A TERTIARY PEDIATRIC INTENSIVE CARE UNIT

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### POST-HURRICANE HYPERSENSITIVITY PNEUMONITIS

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### Abstract #374

A 57 year old man with medical history of heart failure with preserved ejection fraction, chronic kidney disease, obstructive sleep apnea, and hypertension presented with shortness of breath after working to renovate his home’s damage from Hurricane Ida. On presentation, he had a blood pressure of 221/144 mm/Hg and was saturating 45%...
on room air. His initial arterial blood gas (pH 7.28, PaCO2 56, PaO2 58, HCO3 26.3) demonstrated significant hypoxic hypercapnic respiratory failure. His chest radiograph revealed significant bilateral pulmonary edema and he was aggressively diuresed due to his history of heart failure. However, his respiratory function worsened with diuresis and he was intubated in the ICU. Infectious causes and pulmonary embolism were ruled out as possible causes of his respiratory failure; he had negative blood cultures, an unremarkable chest CT angiogram, and transudative pleural fluid. Steroids were started for possible pneumonitis with his recent environmental exposure. The addition of steroids resulted in significant improvement in pulmonary function, and two days after intubation he was saturating 96% on 3L nasal cannula.

**Discussion**

The patient’s rapid improvement with steroids makes the diagnosis consistent with hypersensitivity pneumonitis caused by exposure to dust and molds he encountered during his home renovations. Both Wood Dust Pneumonitis, caused exposure to oak, cedar, or pine dust, and Toxid Dust Syndrome, caused by exposure to damp, moldy textiles in the house, are possible etiologies of our patient’s pulmonary dysfunction. This diagnosis may be significant for citizens in hurricane-prone areas who are exposed to dust and mold, especially if not utilizing adequate protection doing the renovations. A thorough history provided important details that allowed the team to consider less common causes of respiratory failure when initial therapy for a common etiology failed.

**Case Report**

Pneumoniosis is associated with coal mining with coal dust particles depositing within lung in various locations which can lead to progressive massive fibrosis (PMF) and can develop cavitary lesions in those PMF areas concerning for tuberculosis and Aspergillosis. We present a patient with Black lung with PMF who presented with chronic dyspnea and hemoptysis with upper cavitary lesion on chest imaging.

59 year old male with past medical history of coal worker pneumoconiosis causing progressive massive fibrosis diagnosed in 2004, coronary artery disease, presented with chronic dyspnea for many years that is worsening within the last eight months. He notes dyspnea with walking very short distances with associated productive cough with clear to yellow sputum. He admits to occasional wheezing, paroxysmal dyspnea, hemoptysis and orthopnea, denies chest pain, dysphagia, or reflux. He is using his albuterol inhaler three to four times a day with nebulization treatment twice a day. He is not on any maintenance inhalers. He is an every-day smoker of two packs per day for the last forty years. He worked in the underground coal mines for 28 years wearing protective gear at times. His physical exam was only remarkable for bronchial breath sounds with normal respiratory effort.

Upon review of his chest x-rays and CT chest, he had a right upper lobe infiltrate diagnosed as PMF as far back as 2004. As the years progressed PMF has been stable and then new cavitary lesion developed in PMF area the cavity infiltrate progressively got larger with a thick wall with no eccentric region noted inside the cavity. TB quantiferon test was negative. He underwent CT guided biopsy that was complicated by a pneumothorax needing chest tube placement. Subsequently he had endobronchial ultrasound with right upper lobe transbronchial biopsy with methenamine stain which showed acute angle branching and septation suggestive of aspergillus species. He was diagnosed with Invasive Pulmonary Aspergillosis and was started on voriconazole for one year by infectious disease. Post treatment serum galactomannan was in normal range.

This case shows that patients with coal workers pneumoconiosis causing progressive massive fibrosis and new onset cavitary lesions would need further work up to be done to rule out tuberculosis and Aspergillosis. Aspergillosis is rare but not uncommon in Black lung with PMF patients especially if they have new onset cavitary lesions. Early diagnosis and treatment with antifungals can help in improving patient’s symptoms and mortality.
Renal, electrolyte and hypertension

Joint plenary poster session and reception

4:30 PM

Thursday, February 10, 2022

#377 NIVOLUMAB INDUCED ACUTE INTERSTITIAL NEPHRITIS

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10.1136/jim-2022-SRMC.373

Case Report

Nivolumab is a biological therapy that belongs to the immune check point inhibitors (ICPIs) class. It is used for treatment of metastatic melanoma, non-small cell lung cancer, and renal carcinomas. These novel biologics may cause immune mediated adverse effects. We report a case of Acute interstitial nephritis (AIN) secondary to Nivolumab treatment with favorable outcome.

A 74-year-old male patient was referred to the hospital due high renal parameters consistent with acute kidney injury (AKI). He reported feeling unwell for a week. Denied symptoms of overload, uremia or change in urine volume or color. No history of kidney disease. No recent use NSAID or betalactam antibiotics. He had been found to have recurrent extensively metastatic Melanoma. Thus, he was started on nivolumab 12 weeks prior to admission. He had completed the second cycle 4 weeks prior to admission. Per chart review, kidney function was completely normal before starting immunotherapy and started to decline just prior to 2nd cycle. Vital signs and physical exam on presentation were unremarkable. Initial Lab results showed mild hyperkalemia, high creatinine level at 8.5 mg/dl and BUN at 78 mg/dl. Low eGFR at 6 ml/min and bicarbonate was at 11 mMol/L which represented a mixed anion gap and non-anion gap metabolic acidosis. Urinalysis was unremarkable except for white cells and eosinophils. Thus, he was started on bicarbonate infusion. Further work up to rule out multiple myeloma, viral hepatitis, HIV, and autoimmune disease was negative. Renal ultrasound ruled out obstruction. Based on these data, a diagnosis of AIN secondary to Nivolumab was made. Hence, steroid therapy was immediately started. On 2nd day of admission, he was found to be oliguric, and he continued to have metabolic acidosis with no improvement. He received one session of hemodialysis. Subsequently, his condition improved with recovery of renal function and was discharged home.

AIN is immune-mediated tubulointerstitial disease that causes a decline in kidney function. About 70% of causes are related to medications including antibiotics, NSAID, PPIs and others. Other causes include infections and autoimmune disease. AIN typically presents with AKI and triad rash, fever, and eosinophilia although this triad only found in 10% of patients. Urinalysis may show white cells, white cell casts, and, in some cases, eosinophilia like ours. Early diagnosis, withholding the offending agent and steroid management are important steps in management. Mamloouk and et al, stated in their retrospective study that ICPI related nephrotoxicity is mainly related to AIN and the incidence has been reported as 2% when nivolumab is used alone and 4.5% with combination nivolumab and ipilimumab. The use of ICPI is expanding...
for treatment of several cancers. However, the literature on the ICPI related nephrotoxicity is limited.

**Severe Hypomagnesemia Secondary to PPI in a Patient with an Ostomy**


10.1136/jim-2022-SRMC.374

**Case Report** Proton pump inhibitors are one of the most widely prescribed medications worldwide. The association between PPI therapy and hypomagnesemia has been recognized since 2006 with a report of two patients developing severe magnesium deficiency, in addition to hypocalcemia and hypokalemia, whilst on long-term PPI treatment. Hypomagnesemia can be a result of gastrointestinal losses, renal losses, alcohol use disorder, or medication side effect. Severe hypomagnesemia can lead cardiac and neurologic dysfunction, manifesting as arrhythmias-torsades de pointes or tremors, weakness, tetany or convulsions.

A 76-year-old male with a long standing history of GERD and a total colectomy secondary to colitis presented to the ER reporting increased output from his ostomy. He was managed for an AKI (creatinine 2.29) and severe hypomagnesemia 0.6 mg/dl. The patient was treated with intravenous magnesium replacement and discharged with a prescription for daily magnesium oxide supplement. His hypomagnesemia in the setting of his AKI was initially attributed to dehydration and electrolyte losses secondary to his high output stoma. This prompted an outpatient referral to nephrology for review of his renal indices.

On nephrology evaluation, the patient gave a history of recently being started on Pantoprazole for GERD and despite daily oral magnesium replacement therapy, he remained persistently hypomagnesemic (range 1.2-1.3 mg/dl). Repeat chemistries revealed severe hypomagnesemia with a serum level of 0.5 mg/dl, prompting admission for IV electrolyte replacement. His FeMg (Fractional Excretion of Magnesium) was 1% in keeping with non-renal losses. The patient was advised to discontinue PPI therapy and replace with an H2 receptor antagonist. Subsequent chemistries reported serum magnesium within normal range with no additional oral magnesium supplements.

Hypomagnesemia has been shown to be related to the duration the patient is on the PPI therapy. Magnesium is the second most abundant intracellular cation and its homeostasis is intricately regulated by intestinal absorption and renal excretion. Intestinal magnesium absorption occurs by passive paracellular uptake via Claudins and active transcellular transport via TRPM6, the gastrointestinal magnesium transporter. It is hypothesized that proton pump inhibitors impair the active transcellular magnesium transport by inhibition of TRPM6.

The etiology of his hypomagnesemia was thought to be GI losses from a combination of a high output stoma and inhibition of gastrointestinal TRPM6, the gastrointestinal Mg transporter, by Pantoprazole. A FeMg <2% in the setting of hypomagnesemia is in keeping with non-renal losses.

Routine long-term use of PPI therapy in patients susceptible to hypomagnesemia should be regularly reviewed and used only when alternatives are not suitable.

**A Rare Etiology of Elevated Anion Gap Metabolic Acidosis: Methanol Toxicity**

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10.1136/jim-2022-SRMC.375

**Case Report** There are many etiologies of elevated anion gap metabolic acidosis (AGMA) that are commonly taught but not frequently seen in practice. We present an unintentional methanol ingestion as the cause of elevated AGMA.

**Case** A 45-year-old man with past medical history of coronary artery disease and polysubstance use disorder presented with chest pain and worsening blurry vision after consuming ten 24-oz beers and 1.5 fifths of liquor over one day. His chest pain was sharp and substernal without radiation. He denied any other substance ingestion. Physical exam was significant for tachycardia, tachypnea, left conjunctival hemorrhage and mid-sternal tenderness to palpation. Initial lab values showed thrombocytopenia, hyponatremia, hypochloremia, and acidosis, with an elevated anion gap. Toxicology screen showed an elevated methanol level (33 mg/dL; normal <4 mg/dL) and normal ethanol level. Serum osmolality was elevated with an elevated serum osmolar gap. Electrocardiogram showed normal sinus rhythm. Head imaging was negative for acute abnormality. Toxicology, ophthalmology, and nephrology were consulted and urgent dialysis was initiated along with administration of fomepizole and leucovorin. The patient reported vision improvement after treatment.

**Discussion** Methanol toxicity is a rare cause of elevated AGMA and can present a diagnostic challenge. Methanol toxicity can mimic ethanol intoxication and may progress to end-organ damage (renal failure, vision changes) if not promptly recognized. Diagnosis relies upon serum osmolality, blood gas and excluding other etiologies of elevated AGMA. Treatment with fomepizole and leucovorin inhibits breakdown of methanol by alcohol dehydrogenase. Hemodialysis is required for episodes of severe toxicity defined as metabolic acidosis, methanol levels greater than 30 mg/dL or evidence of end-organ damage.

**Do not be Fooled by Bilir! A Case of Falsely Elevated Creatinine with Increased Bilirubin Levels**


10.1136/jim-2022-SRMC.376

**Case Report** Acute kidney injuries (AKI) are common in hospitalized patients. However, creatinine may be falsely elevated without a decline in renal function. Elevated creatinine may occur with high protein supplementation, increased meat consumption, and intense exercise leading to muscle breakdown. Renal secretion of creatinine may be decreased by some drugs elevating serum levels of creatinine. Furthermore, acetone, acetoacetate in DKA, fasting, and hemolysis interfere with the assay used to measure serum creatine. Another pigment that can interfere with creatinine measurement is bilirubin, and significantly elevated values can lead to overestimated creatinine.

A 48yo man with a medical history of decompensated alcoholic cirrhosis requiring serial paracenteses presented for abdominal pain and rectal bleeding beginning 10 days before...
admission with noticeable jaundice for 3 weeks. He had been a daily drinker for the past 20 years. He was admitted with AKI, with serum creatinine 2.45 mg/dl. We started treating hepatorenal syndrome (HRS) with albumin, octreotide, and midodrine. With volume overload present and minimal response to the aforementioned treatment, he began diuresis with furosemide and improved. On day 5 of admission, renal function began to worsen again, with creatinine rising to 4.46 mg/dl. He was re-started on albumin, octreotide, and midodrine with concern for HRS. Renal function continued to deteriorate. He was then transferred out to another hospital for liver transplant evaluation. On day 7 of that hospitalization, he was intubated and started on vasopressors for multifactorial shock. After becoming anuric he was started on CRRT and ultimately did not survive hospitalization. His total bilirubin rose to 44.7 mg/dl during the time his creatinine began rising.

This case was interesting due to the difficulty in interpreting lab values. Over-estimation of creatinine can cause medical providers to believe there is an AKI when renal function is normal or make an AKI appear worse. The Annals of Clinical Chemistry and Laboratory Medicine described in 2015 the phenomenon of elevated bilirubin levels interfering with creatinine measurement. As bilirubin levels rise, the color affects spectrum absorption used to measure creatinine. The effect is seen with bilirubin levels over 20 mg/dL and increases with more elevated levels. This case is clinically significant because increasing bilirubin levels could partially explain this patient's AKI demonstrating the challenging interpretation of creatinine when bilirubin is elevated over 20 mg/dL. This makes treatment of decompensated cirrhotic patients even more challenging in deciding when to initiate treatment of possible HRS. Ultimately, this patient's clinical course was not changed by this phenomenon but should be kept in mind when creatinine starts to increase in the setting of rising bilirubin levels.

#381 ACUTE KIDNEY INJURY AS SEPSIS DEFINING EVENT

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Case Report The presence of acute kidney injury (AKI) is part of the definition of sepsis. AKI develops in about two-thirds of patients with septic shock, and in half of them, AKI develops before presenting to the emergency department. We present a patient who developed AKI as the first indicator that the patient was developing sepsis.

Case 79-year-old man with a past medical history of atrial fibrillation, hypertension, diabetes mellitus, hypothyroidism, cirrhosis, peripheral artery disease, and recently treated for Clostridium difficile (CD) colitis who came to the emergency department complaining of diarrhea and nausea. During the first assessment he was hemodynamically stable, his vital signs and labs were HR: 68 bpm, RR: 16 rpm, BP: 135/70 mmHg, O2 Sat:98% on room air, Hg: 16.3 g/dl, WBC:8.42 k/dl, PLT: 232 k/dl, serum creatinine (Cr):2.0 mg/dl, BUN:54 mg/dl, Na:129 mmol/l, Chloride:91 mmol/l, CD PCR positive, and CD toxin A/B by EIA positive. Thus, the patient was started on fidaxomicin. From day 1 to 4 of admission, the serum Cr trended down from 2.0 to 1.6 mg/dl. Early in the morning on day 5 of admission, the patient continued to be hemodynamically stable, with controlled diarrhea and nausea, but the serum creatinine increased to 1.9 mg/dl. Later that day, the patient became hemodynamically unstable with altered mental status, and his vital signs and labs were now HR:110 bpm, RR: 25 rpm, BP: 88/60 mmHg, O2 Sat:96% on 6L nasal cannula, Hg: 14.3 g/dl, WBC:27.45 k/dl, PLT: 149 k/dl, serum creatinine (Cr): 2.0 mg/dl, and BUN:54 mg/dl. Abdominal X-ray demonstrated colonic dilatation >7 cm raising suspicion for septic shock secondary to toxic megacolon. The patient was transferred to the medical intensive care unit for vasopressor support where two sets of blood cultures were positive with Enterobacter cloacae. Based on sensitivity, he was started on antibiotic coverage for gram-negative bacteremia and intravenous metronidazole was added for additional toxic megacolon coverage.

Discussion Sepsis-associated AKI is a common, life-threatening complication that increases mortality up to eightfold. AKI can play a fundamental role, not only as a lethal complication of sepsis but also as a sepsis-defining event. Analogous to the canaries that would alert the coal miners about the presence of toxins in the air prompting the evacuation of the mine, AKI may be an early sign that alerts the presence of sepsis and prompts the early initiation of interventions that can impact survival in a time-dependent fashion.

#382 WHEN A RENAL BIOPSY GOES WRONG! A RARE CASE OF A SUBACUTE RENAL ARTERY PSEUDOANEURYSM

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Case Report Percutaneous renal biopsy is the gold standard procedure for diagnosis and treatment of most kidney diseases. Generally, it is considered a safe procedure. Literature has shown that late-onset retroperitoneal hemorrhage following a kidney biopsy is an extremely rare complication, that presented in 0.04% of patients in which vasculitis was determined to be a predisposing factor.

This is the case of a 30-year-old female patient with medical history of arterial hypertension, hypothyroidism, immune thrombocytopenic purpura, and systemic lupus erythematosus (SLE), who arrived in our emergency department with signs and symptoms concerning for lupus nephritis. Initial laboratory results were remarkable for leukopenia, thrombocytopenia, proteinuria, low C3 and C4, positive ANA and anti-double stranded DNA antibodies consistent with SLE. She had rapid deterioration of renal function, nephrotic range proteinuria and anasarca, worrisome for aggressive SLE flare, reason for which high dose steroids and cyclophosphamide 1000 mg (0.5 mg/m2) with mesna 250 mg were provided. Due to concerns of Nephritis, patient underwent left percutaneous renal biopsy without complications. Biopsy results were consistent with diffuse proliferative lupus glomerulonephritis, RPS Class IV, and thrombotic microangiopathy. Patient responded adequately to therapy, and after 1 week was discharged with stable hemoglobin levels and no signs of acute bleeding. A couple of days after hospital discharge, she returned to the emergency department complaining of back pain and lower extremity swelling. Laboratory workup revealed new onset of bilateral hematuria with grade 2 proteinuria, without decrease in renal function. Percutaneous renal biopsy was performed confirming a pseudoaneurysm of the renal artery. Patient underwent successful embolization with no complications.
department with acute complaint of left flank pain, vomiting and altered mental status and hypotension. Physical examination was remarkable for pallor, and a soft, depressible, non-tender, but distended abdomen. Bedside ultrasound showed free abdominal fluid at the paracolic gutters. Laboratories were consistent with hemoglobin levels of 4.0 mg/dL. There was a clinical suspicion of hemorrhagic shock secondary to active bleeding. Abdominal CT showed abundant hemoperitoneum and a large left subcutaneous perinephric hematoma extending to the retroperitoneal, intraperitoneal and pelvic spaces. Angiography found a large left renal artery cortical pseudoaneurysm that was actively bleeding. Patient underwent emergent selective artery embolization with fibered coil and gel foam slurry. Hemodynamic stability was achieved after multiple blood transfusions.

This case highlights the increased risk of vascular complications seen in patients with lupus nephritis. The vasculitis associated with the disease itself and the available therapies can both cause endothelial dysfunction and vascular wall thinning, increasing the risk of aneurysm or pseudoaneurysm formation. Although these are very rare complications after percutaneous kidney biopsy, this procedure carries significant mortality rate if there is a vascular rupture or a life-threatening retroperitoneal hemorrhage. There should be a low threshold for emergent surgical or percutaneous interventions such as vessel embolization.

**#383 METFORMIN-ASSOCIATED LACTIC ACIDOSIS IN THE SETTING OF PRE-RENAL ACUTE KIDNEY INJURY**

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10.1136/jim-2022-SRMC.379

**Case Report** Metformin-Associated Lactic Acidosis (MALA) is a rare but serious adverse effect of metformin therapy often associated with acute kidney injury.

**Case** A 66-year-old man with a history of type 2 diabetes mellitus, hypertension, hyperlipidemia, and coronary artery disease presented to the Emergency Department (ED) with nausea, vomiting, and generalized weakness. The patient had been working on exterior home repairs in the aftermath of Hurricane Ida in temperatures that exceeded 90 degrees Fahrenheit. His home medications included metformin, glipizide, lisinopril, aspirin, clopidogrel, and atorvastatin. At the time of admission he was found to be in acute renal failure with a creatinine of 11.23 mg/dL, potassium of 6.0 mg/dL, anion gap of 27, lactac acid of 11.8 mmol/L, and a venous blood gas with pH 6.99. EKG showed peaked T-waves. The patient was treated with insulin, calcium gluconate, and volume resuscitation in the ED before emergent hemodialysis was performed. Two sessions of hemodialysis were required to resolve his acidosis and hyperkalemia. His renal function was monitored for 3 days, after which he was stable for discharge with outpatient follow-up on a new diabetes regimen of glipizide and linaglaptin.

**Discussion** MALA is associated with decreased renal excretion of metformin during acute kidney injury. The process of metformin-induced lactate production is uncertain, but is thought to be related to inhibition of hepatic gluconeogenesis and increased peripheral glucose utilization. This can amplify lactic acidosis caused by another disease process, such as inadequate tissue delivery in this patient with volume depletion. While metformin is commonly used as a first-line diabetic agent, prescribers should be aware of its rare but serious adverse effects.

**#384 PRIMARY HYPERALDOSTERONISM**

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10.1136/jim-2022-SRMC.380

**Case Report** Primary Hyperaldosteronism is a common, yet underdiagnosed cause of secondary arterial hypertension.

**Case** A 39-year-old African American man with a history of heart failure with reduced ejection fraction <15% (HFrEF), chronic kidney disease stage III (CKD 3), resistant hypertension (HTN), and primary hyperaldosteronism (PA) presented for multiple hospital admissions due to HTN emergency and heart failure exacerbations. Over a ten-year span, CT angiograms demonstrated an increasing left adrenal mass. His aldosterone/renin ratio was continually increasing over the last 2 years. He was unable to follow up for successful adrenal vein sampling and subsequent surgical intervention. During his hospitalization, the aldosterone antagonist, anti-hypertensive medications and diuretics were titrated to maintain optimal blood pressure and normokalemia. Given the patient’s cardiac risk owing to his advanced HFrEF, he declined the adrenalectomy and opted for maximum medical management. He was discharged with isosorbid dinitrate, bumetanide, carvedilol, secubitril/valsartan and aldaclone. During his two-week follow up visit, his symptoms had resolved, his blood pressure was well controlled and his serum electrolytes were unremarkable.

**Discussion** This is a case of resistant hypertension causing severe heart failure and chronic kidney disease that was secondary to primary hyperaldosteronism. For patients who meet diagnostic screening criteria, obtaining a plasma aldosterone/renin ratio is recommended. All patients with primary aldosteronism should undergo adrenal CT. If surgical treatment is feasible, then an adrenal venous sampling should be performed to distinguish between unilateral and bilateral adrenal disease. Recommended treatment for PA includes adrenalectomy. For patients who cannot undergo adrenalectomy, pharmacological management with a mineralocorticoid receptor antagonist is recommended.

**#385 MINOXIDIL-INDUCED PERICARDIAL EFFUSION: A RARE SIDE EFFECT**

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**Case Report** Minoxidil is a potent antihypertensive vasodilator. The drug is recommended to manage hypertension that is symptomatic or associated with target organ damage and is not manageable with maximum therapeutic doses of a diuretic plus two other antihypertensives. Even though highly effective, its use is limited by the association of the drug with pericardial effusion. Minoxidil-induced pericardial effusion must remain on the differential in patients taking minoxidil with new pericardial effusion. The manufacture recommends looking out for signs and symptoms of pericardial effusion or...
cardiac tamponade initially every 1 to 3 months of starting the medication, then every 6 to 12 months once stable.

**Case presentation** A 19-year-old male with a past medical history of end-stage renal disease secondary to focal segmental glomerulosclerosis on hemodialysis with multiple hospital admissions for hypertensive emergency presented with intermittent chest pain for the past two days. The pain was retrosternal, worsened by cough, inspiration, lying down, and relieved by standing up or leaning forward. His blood pressure medications included amiodipine, clonidine, losinopril, and minoxidil. His HR 101, BP 213/139, normal physical examination with +1 leg swelling. Labs showed hemoglobin of 8.7, normal WBC, bicarbonate of 33, BUN 15, creatinine of 3.7, troponin of 112.4, BNP of 3331, and lactate acid of 2.4. EKG showed no ischemic changes. Transthoracic echocardiography demonstrated EF 50–55%, moderate pericardial effusion without tamponade. The patient was compliant with hemodialysis with normal RRT, indicating a low likelihood of uremic pericarditis. It was suspected that a recent increase in the minoxidil dose from 20 mg BID to 40 mg BID was suspected. Minoxidil treatment was tapered and switched to nicardipine drip, and IV labetalol was added; amiodipine was exchanged for nifedipine to improve control of hypertension. Subsequent echocardiography showed improved EF of 53–60% with resolving small anterior and posterior pericardial effusion.

**Discussion** Minoxidil-induced pericardial effusion has been reported as early as 1981, with the incidence of pericardial effusion in patients taking minoxidil being approximately 3%. Discontinuation of the drug in such cases results in a reduction in pericardial fluid and symptom cessation. This case demonstrates the need to consider minoxidil-induced pericardial effusion in similar cases with unclear cause, a drug associated with dose-dependent pericardial effusion.

**Conclusion** We conclude that, although rare (3%), minoxidil-induced pericardial effusion must remain on the differential in patients taking minoxidil with pericardial effusion unresponsive to hemodialysis. Termination of the drug or reduction in dose often leads to resolution of effusion and symptoms.

**Abstracts**

#386 DIAPHRAGMATIC SHUNT ASSOCIATED WITH PERITONEAL DIALYSIS

T Nguyen*, BL Boudreaux, T Fox, F Yazzé, LS Engel, SA Morse, A Perez. LSU Health New Orleans, New Orleans, LA

**Case Report** Pleuroperitoneal shunts are pathologic connections between the pleural and peritoneal spaces and are an uncommon complication associated with peritoneal dialysis (PD)

**Case** A 55-year-old woman with a past medical history of coronary artery disease with CABG, hypertension, type 2 diabetes, ESRD secondary to Polycystic Kidney Disease on PD presented with a complaint of 4 days of worsening shortness of breath and dyspnea after minimal exertion. On arrival, chest X-ray revealed a large right-sided pleural effusion. Thoracentesis was performed, which revealed a glucose count of 593 mg/dL concerning for peritoneal fluid. The remainder of the fluid studies including cultured, were unremarkable. CT scan of the chest without contrast demonstrated a large right-sided pleural effusion occupying 1/2 volume of the right hemithorax, diastases of the sternum widening from the superior to the inferior margin of the sternum, and ventral herniation of the epicardial fat in the midline at the lower margin of the sternal defect. The patient was admitted for this diaphragmatic defect and associated peritoneal shunt. Cardiothoracic Surgery performed video-assisted thoracoscopic surgery (VATS) with tachypleurodesis to prevent peritoneal fluid from entering the thoracic cavity again. During this intervention, the only abnormalities noted were adhesions between the right lower lobe and the diaphragm. The patient was transitioned from PD to hemodialysis (HD) during her hospitalization. HD was planned to continue for at least 8 weeks following her VATS while her diaphragm healed before returning to PD.

**Discussion** Pleuroperitoneal shunts are more common among female PD patients and may be more likely to occur in patients with polycystic kidney disease. The development of hydrothorax in PD patients typically occurs acutely (within the first month of initiation) whereas this patient had been undergoing peritoneal dialysis for approximately 18-20 months before the above presentation. Ultimately, our patient chose to stay on HD rather than try PD due to personal preferences, and this decision precluded further evaluation.

**Abstracts**

#387 A CASE OF SECONDARY IGA NEPHROPATHY

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**Case Report** Immunoglobulin A (IgA) nephropathy is characterized by predominant IgA deposition in the glomerular mesangium. It is one of the most common causes of glomerulonephritis in the world. It frequently coexists with inflammatory, autoimmune, infectious, or malignant processes. Here we present a case of IgA nephropathy secondary to cirrhosis due to extrahepatic portal vein thrombosis and splenic vein thrombosis as a complication of gall stone pancreatitis.

**Case** The patient is a 42 year old female with a past medical history significant for cirrhosis secondary to splenic vein thrombosis and extrahepatic portal vein thrombosis. Her cirrhosis was complicated by esophageal varices and thrombocytopenia. The patient was referred to kidney clinic for evaluation of stage III chronic kidney disease and proteinuria.

*There was no family history of kidney disease. The patients medicine included*

The review of systems was negative for any rash, swelling, or joint pains. Physical examination was unremarkable except for splenomegaly.

**Lab**

- CBC: wbc:4.1x10^3/ul, hgb:12 mg/dl, Plt:90000x10^3/ul
- CMP: Bun:36 mg/dl, Cre:1.5 mg/dl, Cl:110 mmol/L, Co2:24 mmol/L, K:4.1 mmol/L Na:140 mmol/L, Ca:8.9 mg/dl Albumin: 2.8 g/dl, INR:1.1
- Extensive workup for possible hypercoagulable state was negative

**Urinary Analysis**

- Rbc:3–5, Protein 100 mg/dl, ph:5, UPCR:1.3 gr/L
- Hepatitis profile and viral (including CMV, EBV, HIV, etc) workup were negative
- ANA screen test +, SmRNP +, anti dsDNA negative, c3: 73 mg/dl (83–180). C4: 14 mg/dl (18–55)
- CT scan of the abdomen showed cirrhosis with chronic occlusion of portal vein, ascites, left pleural effusion and splenomegaly. Kidneys had mild cortical scarring.
- Renal ultrasound on 4/13/21 showed bilateral lobular kidneys, Right kidney length 9.3 cm, left kidney length10.8 cm
VACUOLATED ACELLULAR CASTS ARE A DISTINCT TYPE OF URINARY CASTS ASSOCIATED WITH SEVERE NEPHROTIC GLOMERULOPATHY

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Purpose of Study Urinary casts identified through microscopic examination of the urinary sediment (MicrExUrSed) constitute clinically useful elements for the diagnosis of acute and chronic kidney pathologies. Granular, waxy and cellular casts are well characterized. However, a unique type of casts containing non-polarizable lipidoid-like granules immersed within a lightly granular cast matrix is occasionally found. These casts have been labeled as vacuolated acellular casts (VAC). The clinical significance of VAC is not known. Herein, we present a case series of patients with specimens containing VAC.

Methods Used We utilized an educational social media platform (Twitter) to probe for individual cases of VAC. We surveyed known educators who frequently post microphotographs of MicrExUrSed asking for filed cases of identification of VAC. Demographic and clinical characteristics were extracted and representative images were compiled for correct identification of VAC.

Summary of Results Four urine microscopists (2 from Brazil, 1 from India, 1 from USA) contributed to the case series. A total of 17 cases were identified. Images were carefully reviewed to confirm identity of VAC. Median age 56 (15–81), 76% men, 59% had type 2 diabetes mellitus. Median serum creatinine at the time of MicrExUrSed was 3.4 (1.2–6.5) mg/dL. 16/17 (94%) patients had 3+ protein by urinary dipstick. Urine protein-to-creatinine ratio was in the nephrotic range in 9/10 (90%) cases with available value [median 6.7 (1.3–11.7) g/g]. Concomitant findings included hematuria (58%), waxy casts (67%), granular casts (80%), fatty casts (42%) and renal tubular epithelial cells (58%). Histopathological diagnosis was available in 11 cases: 3 diabetic glomerulopathy, 3 focal segmental glomerulosclerosis, 2 transplant glomerulopathy, 1 membranous nephropathy, 1 thrombotic microangiopathy, and 1 advanced arterionephrosclerosis. Greater than 25% interstitial fibrosis was present in 7/11 (64%) cases.

Conclusions VAC are a distinct type of casts that can be found in specimens of patients with advanced proteinuric glomerulopathy. The specific origin and composition of these casts remains unknown and requires further study.

TRAMADOL ADVERSE EFFECTS MIMIC THE SYMPTOMS OF UREMIC ENCEPHALOPATHY

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Purpose of Study Tramadol is a synthetic opioid which selectively binds to opioid receptors in CNS which mediates its analgesic activity. It is known to cause seizures (2). Muscle twitching is another rare side effect of tramadol seen in less than 1% of patients however the fact that muscle twitching and myoclonic jerks can also be seen in uremic encephalopathy, it can be difficult to sort out without discontinuation of the drug (3). Our case highlights a scenario where the side effects of tramadol can mimic symptoms of uremic encephalopathy and be missed. Our patient’s diligent dialysis did not improve the uremic like symptoms until tramadol was discontinued.

Conclusion Tramadol should be cautiously used in ESRD patients as some of its adverse effects can mimic the symptoms of uremic encephalopathy.

REFERENCES


The patient was referred to Rheumatology clinic for possible systemic lupus erythematosus (SLE). Hydroxychloroquine 300 mg/day was started. The patient was referred to renal clinic for further evaluation of proteinuria and possible kidney biopsy. A kidney biopsy was ordered as the etiology of the proteinuria was uncertain.

The kidney biopsy showed findings consistent with IgA nephropathy with predominately IgA deposition in the mesangium, moderate fibrosis and moderate tubular atrophy.

Conclusion Determining the underlying causes of proteinuria in a patient with chronic liver disease can be challenging, especially in a patient such as this who had several possible etiologies. Although rare, IgA nephropathy can be seen with systemic lupus erythematosus. In this case, the patient did not meet SLE diagnostic criteria, so a kidney biopsy was performed for definitive diagnosis, which demonstrated IgA nephropathy, likely secondary to chronic liver disease.
Abstracts

Case Report Hyponatremia is one of the most common electrolytic disturbances encountered in the inpatient and outpatient setting. It is commonly known to present a confusing clinical picture. Although many clinicians are aware of the term ‘pseudohyponatremia’ they limit their initial diagnostic approach to rare cases. This case denotes the importance of the clinical history and the meticulous evaluation of laboratory values.

A 73-year-old male with Monoclonal Gamopathy of Undetermine Significance- IgG lambda and benign prostatic hyperplasia, received follow-up due to constant proteinuria observed in urinalysis. Laboratories were remarkable for asymptomatic chronic hyponatremia (129 mEq/L), adequate renal function, no hypoalbuminemia or other electrolytic disturbance. An elevated total protein (10.6 g/dL), IgG lambda (5,913 mg/dL), and total urine protein (60.5 mg/dL) with M-spike present were noted. Lipid profile failed to reveal dyslipidemia. At patient’s two months follow-up, vital signs remained stable. He denied any complaints and physical examination was unremarkable. Routine laboratory results did not present major changes in the setting of MGUS without CRAB criteria. In addition to proteinuria, chronic hyponatremia was concerning as patient may develop confusion, lethargy, seizures and even death in extreme cases. However, upon further lab review, an increasing trend in serum total protein and proteinuria was observed, which correlated with decreasing sodium levels. It is of utmost importance to recognize that at our institution, laboratory methodology uses an indirect potentiometer (or flame photometry) which uses a fixed diluted serum sample containing less water than assumed due to the volume occupied by proteins. This differs from direct potentiometry that does not involve a sample dilution; thus, sodium measurements are not affected by hyperlipidemia and hyperproteinemia.

In this specific case, pseudohyponatremia was caused by a displacement of serum water by elevated concentrations of serum proteins, which should be distinguished from true hyponatremia during the initial evaluation. We present a case in which a careful history along with awareness of the different methods available for measurement of serum sodium enabled the identification of the underlying etiology. This case highlights the importance of a detailed history and laboratory evaluation in order to identify an artifactual result in laboratories.

#391 WATER INTOXICATION IN A 48-YEAR OLD WOMAN AFTER A NIGHT OF BINGE-DRINKING

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Case Report Excessive water intake or polydipsia is defined as consuming more than three liters of fluids per day and drinking 10-15 liters in a day counts as extreme polydipsia.1 The most severe complication of extreme polydipsia is water intoxication which is characterized by severe hyponatremia and systemic symptoms such as nausea, vomiting, delirium, ataxia, seizures, and coma. Polydipsia, even when extreme, does not always progress to water intoxication. The pathophysiology of polydipsia is not well researched but is presumed to be related to hypothalamic and hippocampal disturbances.2

Case presentation We present a case of water intoxication in a 48-year old female who presented with acute, severe and symptomatic hyponatremia after ingesting 12 liters of water in a 24-hour period.1

Patient is a 48-year-old, white female with DM2, hypertension, rheumatoid arthritis and sarcoidosis who presented to the hospital with altered mental status and witnessed seizure. The day prior to admission, she drank beer to the point of blacking out. Shortly after beer consumption, she began to have an episode of vomiting-when which she drank a total of 12L of water. She was intubated for airway protection on arrival to the ICU. Serum sodium was 121 mEq/L and was corrected appropriately. Two days after her admission, her sodium had corrected to 135 and her mental status had returned to baseline; she was discharged two days later.

Discussion The patient in this case has multiple risk factors for polydipsia, including binge-drinking, low-protein diet, sarcoidosis, and hypertension. Patient also reported having a low protein diet and her albumin level was 3.6 on admission. Pt had a normal serum creatinine of 0.5 mg/dL which is consistent with her body weight of 60kg. Drinking a large amount of low solute fluids (i.e. beer and water) with a protein deficient diet made her susceptible to tea and toast syndrome,3 which would impair the kidney water excretion. This is a novel presentation of polydipsia because of the resultant water intoxication on her presentation. The management of the patient’s condition demonstrated how prompt recognition and management can effectively and rapidly treat cases of severe polydipsia.

REFERENCES

#392 THROMBOTIC MICROANGIOPATHY IN A PATIENT WITH COCAINE ABUSE

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10.1136/jim-2022-SRMC.388

Case Report Diagnosis and management of thrombotic microangiopathy (TMA) that primarily present with AKI are especially complex since they are less well-appreciated and described in adults.[1] We present a case with of a young female with granulomatosis with polyangiitis and thrombotic microangiopathy masked with obstructive uropathy and reflux nephropathy

Case A 22-year-old female with antiphospholipid syndrome, left hydronephrosis due to ureterovesical reflux at age of 10 and CKD III presented to the hospital with left sided
flank pain, hematuria, and dysuria. She was febrile. CT abdomen showed mild left hydronephrosis with enhancement of the left ureteral wall and left periureteral stranding. She had elevated creatinine and despite stent drainage of hydronephrosis, she continued to have worsening creatinine levels. Her anti neutrophil antibody panel (ANCA) was positive for the cytoplasmic pattern and a kidney biopsy showed thrombotic microangiopathy with possibility of granulomatosis with polyangiitis based on one possible crescent and chronic changes of more than the third of the glomeruli being globally sclerosed in addition to significant interstitial fibrosis. A history of cocaine use was elicited in addition to previously diagnosed antiphospholipid syndrome. Steroids and rituximab were started with significant improvement.

Discussion
Thrombotic microangiopathy (TMA) describes a pathological process of microvascular thrombosis, consumptive thrombocytopenia and microangiopathic hemolytic anemia (MAHA), leading to end-organ ischemia and infarction affecting particularly the kidney and brain.[2] Primary TMs include thrombotic thrombocytopenic purpura (TTP), drug-induced TMA (DTMA), metabolism-mediated TMA, and coagulation-mediated TMA.[3]

Approved and illegal drugs ‘including recreational use of cocaine’ can cause dose dependent, non-immune drug induced thrombotic microangiopathy that is usually attributed to lacing cocaine with levamisole. The presentation can be acute or chronic occurring after weeks or months of drug administration.[4 5] Physicians should be aware that cANCA associated chronic disease in younger population may be related to laced cocaine recreational use.

Renal Involvement in Antiphospholipid syndrome can be characterized by thrombotic occlusion of the arteries and arterioles of the kidney and can show as intra capillaries thrombi. Other glomerular lesions are described in patients with primary APS including membranoproliferative, minimal change disease, and pauci-immune glomerulonephritis.

Conclusion
Thrombotic Microangiopathy in young adults can be attributed to multiple factors including drug abuse and antiphospholipid syndrome and be masked with other nephropathies including obstructive nephropathy.

Southern society for clinical investigation and Southern American federation for clinical research – plenary session

SSCI young investigator award finalists
Nathan Solomon & Irene Oransky-Solomon

medical student awards

SSCSI poster award finalists
SAFMR/SSCSI/Young faculty award
SAFMR/SSCSI/Trainee research award
8:00 AM

Friday, February 11, 2022

#392A ASSOCIATION OF TRANSTHYRETIN VAL122ILE VARIANT WITH INCIDENT HEART FAILURE AND MORTALITY AMONG BLACK AMERICANS: INSIGHTS FROM THE REGARDS STUDY

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Purpose of Study
Genetic mutation in the TTR gene (rs76992529; Val122Ile) seen exclusively in individuals with African ancestry (population frequency: 3–4%) causes misfolding of the tetrameric transthyretin protein complex that accumulates as extracellular amyloid fibrils seen in hereditary transthyretin amyloidosis (hATTR). Estimation of the effect of this amyloidogenic TTR variant on the risk of heart failure (HF) and all-cause mortality in a large, geographically diverse cohort of Black Americans may provide insight into the clinical significance of this variant. We evaluated the Black participants from...
the Reasons for Geographic and Racial Differences in Stroke (REGARDS) study to examine the association of TTR Val122Ile mutation with HF and all-cause mortality.

Methods Used We evaluated self-reported Black American participants of the REGARDS study without HF at baseline. Poison regression was used to estimate the rates of incident HF and all-cause mortality. We used multivariable-adjusted Cox regression models accounting for demographic, clinical, and social factors, and genetic African ancestry to assess the risk of incident HF and all-cause mortality among those carrying TTR Val122Ile genetic variation compared with those without the variation.

Summary of Results Among 7,514 Black participants (median age: 64 years; 61% females), the population frequency of the TTR Val122Ile variant was 3.1% (232 carriers; 7,282 non-carriers). The incidence of HF (per 1000 person-years) was 15.9 (95% CI: 11.5–21.9) among variant carriers and 7.2 (95% CI: 6.6–7.9) among variant non-carriers. Val122Ile variant carriers had a higher risk of incident HF (HR: 2.46 [95% CI: 1.72–3.33]; P<0.0001) compared with non-carriers. The incidence of all-cause mortality (per 1000 person-years) was 41.5 (95% CI: 34.6–49.7) among variant carriers and 33.9 (95% CI: 32.7–35.2) among variant non-carriers. Val122Ile variant carrier had a higher risk of all-cause mortality (HR: 1.44 [95% CI: 1.18–1.76]; P=0.0044) compared with non-carriers.

There was no interaction between TTR variant carrier status and sex on HF and all-cause mortality outcomes.

Conclusions In a large cohort of Black Americans, we demonstrate that the amyloidogenic Val122Ile mutation in the TTR gene is associated with a ~2.5-fold higher risk of HF and a ~40% higher risk of all-cause mortality. With the advent of numerous hATTR therapies, the presence of TTR Val122Ile mutation seen commonly in those with African ancestry may be deemed clinically actionable and prompt an early access to therapy.

#392C DICARBONYL L-XYLULOSE REDUCTASE (DCXR) AS A DIAGNOSTIC MARKER FOR MUDDY BROWN GRANULAR CASTS AND ACUTE TUBULAR INJURY

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1Ochsner Health, New Orleans, LA

10.1136/jim-2022-SRMC.390

Purpose of Study Detection of abundant ‘muddy’ brown granular casts (MBGC) during microscopic examination of the urinary sediment (MicrExUrSed) is pathognomonic of acute tubular injury (ATI). Because hospital laboratories do not optimally report MBGC, nephrologists have to independently perform MicrExUrSed. Thus, a diagnostic test to identify MBGC without performance of MicrExUrSed could be clinically useful. Unlike most AKI biomarker discovery approaches, we hypothesized that MBGC-enriched urinary sediment (MBGC-sedi) contains unique proteins that could serve as biomarkers of ATI.

Methods Used MicrExUrSed was performed in specimens from patients with acute kidney injury (AKI) seen for nephrology consultation with a suspected etiology of ATI. Specimens from 3 patients containing numerous MBGC (>10 per low power field in >50% of slide) were collected, subjected to low speed centrifugation (100 g), proteolytically digested and analyzed by nano-LC tandem mass spectrometry. Identified proteins were quantified by normalized spectral abundance factor (NSAF).

Proteins were identified by MASCOT and accepted at <1% false discovery. Presence of proteins in casts was verified by immunofluorescence (IF) and western bloting (WB).

Summary of Results A total of 242 proteins were significantly more abundant in MBGC-sedi specimens respect to the supernatant (p<0.05). Among the identified proteins unique to the MBGC-sedi, we selected dicarboxyl L-xylolose reductase (DCXR) as a candidate ATI biomarker because it was the protein with the lowest p value for MBGC-sedi specificity (p=0.00012, per NSAF) and only identified in MBGC-sedi.

To validate the proteomics, in a separate set of MBGC-sedi specimens from patients with AKI due to ATI (n = 10), presence of DCXR was probed by WB and detected in 6 of 7 cases, and DCXR localization within MBGC by IF was verified in 3 of 3 cases.

Conclusions DCXR is abundant in MBGC-sedi and may be a biomarker of ATI as an etiology of AKI. DCXR is an enzyme expressed in the kidney, primarily localized in proximal tubuli, absent in glomeruli. At the cellular level, DCXR is involved in metabolic and osmotic stress detoxification. We conclude that urinary DCXR is a potential target molecule for ATI diagnosis.

#392D PAN- OR SUBTYPE-SELECTIVE PHOSPHODIESTERASE-4 INACTIVATION REDUCES OBESITY AND IMPROVES GLUCOSE HANDLING IN MICE

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1.1136/jim-2022-SRMC.391

Purpose of Study Type 4 cyclic nucleotide phosphodiesterases (PDE4s) comprise a group of four isoenzymes (PDE4A to D) that hydrolyze the second messenger cAMP. Non/PAN-selective PDE4 inhibitors exert potent anti-inflammatory effects and are approved for the treatment of COPD and psoriasis, but are also associated with significant side effects, including nausea, emesis, and weight loss. Here, we explored the idea that the weight loss associated with PAN-PDE4 inhibitor use may be pursued as a desirable therapeutic outcome in the treatment of obesity-related metabolic syndromes. As a first step, we tested whether PDE4 inhibition in mice would replicate clinical data and reduce ageing-and/or high-fat diet-induced obesity in the animals. As each of the four PDE4 subtypes plays unique physiological roles, targeting individual PDE4s is a promising approach to improve the tolerability of PDE4 inhibitor therapy. To this end, we determined the metabolic phenotypes of individual PDE4 subtypes in mice.

Methods Used Body and tissue weights, food and water consumption, glucose and insulin tolerance, serum insulin and glucagon levels, and locomotor activity and exercise capacity were assessed in aged mice, as well as in young mice fed a high-fat diet. To delineate the role of PDE4s, the phenotypes of mice genetically deficient (KO) in each of the four individual PDE4 subtypes, PDE4A to PDE4D, were compared to their wildtype littermates, and mice treated with the PAN-PDE4 inhibitor Roflumilast were compared to solvent controls.

Summary of Results Treatment with the PAN-PDE4 inhibitor Roflumilast reduced high-fat diet-induced obesity in mice, as reflected by reduced body weight and white fat pads, without
lowering food consumption or increasing physical activity (unchanged locomotor activity and exercise capacity) suggesting that the weight-loss effect of PDE4 inhibition observed in clinical trials is replicated in the mouse. Genetic ablation of PDE4B or PDE4D in mice replicated the effects of PAN-PDE4 inhibition and reduced body- and adipose tissue weights in mice, whereas ablation of PDE4A or PDE4C had no effect. Reduced adiposity as a result of PDE4 inactivation was associated with improved glucose handling and insulin sensitivity, while serum levels of insulin and glucagon were unchanged. These data suggest that PDE4 inactivation does not act via pancreatic hormone release but acts in downstream target tissues to enhance glucose utilization.

**Conclusions** Inactivation of PDE4s represents a promising approach to tackle obesity and associated metabolic abnormalities such as elevated blood glucose levels. Targeting PDE4B and/or PDE4D with subtype-selective PDE4 inhibitors appears sufficient to mediate these therapeutic benefits and may be free of the adverse effects associated with the PAN-PDE4 inhibitors available to date.

### #392E HISTOPATHOLOGICAL ANALYSIS OF INTERSTITIAL CELLS OF CAJAL AND NEUROMUSCULAR BUNDLES IN PYLORIC SMOOTH MUSCLE IN PATIENTS WITH REFRACTORY GASTROPARESIS VERSUS CONTROL

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**Purpose of Study** Gastroparesis (GP) is a neuromuscular dysfunction defined as delayed gastric emptying in the setting of no mechanical obstruction. The pylorus has been recently recognized as the focus for explaining the pathophysiology of GP. We investigated whether there is a difference in the number of Interstitial Cells of Cajal (ICC) and small nerve bundles (SNB) in the pyloric sphincter muscularis propria between GP patients and controls.

**Methods Used** A retrospective study was performed to analyze biopsies of the pylorus of ten (10) drug refractory GP patients, who had undergone surgery to perform pyloroplasty to treat pyloric sphincter dysfunction. Immunohistochemistry was performed using antibodies against ICCs (anti-SNAP25) and SNBs (anti-ENaC). The number of ICCs and SNBs was counted in the pyloric sphincter muscularis propria of GP patients and controls. The mean age of patients with GP and control were 45(32–67) and 55(31–66) respectively. Approximately 77% of our GP patients were female, while 22% of our control subjects were female. Mean number of pyloric ICCs in GP patients was significantly depleted while compared to controls 5.9 vs. 10.0 (p= 0.02). Also, there was significant reduction in the number of SNBs in GP patients compared to controls 9.8 vs. 23.4 (p=0.005).

**Conclusions** GP is predominantly a neuromuscular GI motility disorder, with the main etiologies being diabetes mellitus, vagal nerve damage or idiopathic origin. Until now, there was a lack of data showing the status of ICC and SNB in pyloric smooth muscle of ‘healthy’ stomach. Utilization of gastric and pyloric autopsies specimens permits a comparison of pyloric smooth muscle tissue in GP versus controls. The significant difference seen in the ICCs and SNBs gives us insight into the histological changes in severe GP and provides a histopathological diagnostic criteria for GP, as well as establishes normal or ‘control’ data for the pyloric sphincter smooth muscle. Our data provide a rationale for treating pyloric sphincter dysfunction with surgical pyloroplasty in GP patients.

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<th>Abstract #392E Table 1</th>
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<td><strong>Pylorus</strong></td>
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<td><strong>ICCs</strong></td>
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<td><strong>SNBs</strong></td>
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**Analysis**

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<tr>
<th><strong>ICC</strong></th>
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<tr>
<td>p-value</td>
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SD: standard deviation, * indicates statistically significant difference using Mann Whitney U test.

### #392F CORONAVIRUS AT THE HEART CENTER OF PUERTO RICO INCIDENCE-DEATH: THE ROLE OF GENETICS

**1CM Díaz, 1LE Barreto, 2PH Altieri, 1,2HL Banchs. 1University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico; 2Cardiovascular Center of Puerto Rico and the Caribbean, San Juan, Puerto Rico**

**Purpose of Study** Coronavirus disease, caused by a beta-coronavirus, mostly affects the respiratory system. Since it is a novel disease, very little is known about the connection between heart involvement and COVID-19. This study will strengthen the current literature and demonstrate to what extent the coronavirus affects the cardiac system. This is a leap forward towards understanding how the heart responds to the virus; based on a cross sectional study of a Hispanic population.

**Methods Used** In total, 50 patient records with positive PCR for SARS-CoV-2 were collected from the Heart Center Hospital. These 50 patients (P) were admitted after coming into the emergency room. We studied age, sex, race, cardiac involvement, medications, EKGs, Chest Plates, X-rays, CT-Scans, and previous and current health problems. Within the medication section, our prime focus was to observe whether these P were currently taking or took Losartan in the past, because this drug reduces the penetration intracellularly of the virus. For the chronically ill P, we analyzed underlying diseases, intubation and their role in complications or even death.

**Summary of Results** All of the 50 P were from Puerto Rico (P.R.), a Hispanic population. None of the P was taking Losartan. According to the records 96% had severe health problems currently taking or took Losartan in the past, because this drug reduces the penetration intracellularly of the virus. Some had
atherosclerosis, while others had cardiomyopathy or diabetes mellitus, not related to an acute viral infection. Ten percent of these P died; however, their cause of death was not a result of a clear correlation between COVID-19 and other comorbidities. These P were chronically ill and probably the virus further complicated their medical condition.

Conclusions In P, and possibly other Hispanic countries, there are genes which we call ‘protective genes’ (P.G.) that control the incidence and degree of heart disease, especially atherosclerotic heart transmitted by evolution. We believe P.G. are crucial in reducing the risk of contracting severe complications by the COVID-19 virus. In addition, since none of the 50 P was not taking Losartan, we also think this is a factor that will increase the incidence of getting the virus intracelularly, increasing the incidence of death.

**Abstracts**

**#392G** VACUOLATED ACCELLULAR CASTS ARE A DISTINCT TYPE OF URINARY CASTS ASSOCIATED WITH SEVERE NEPHROTIC GLOMERULOPATHY

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**Purpose of Study** Urinary casts identified through microscopic examination of the urinary sediment (MicrExUrSed) constitute clinically useful elements for the diagnosis of acute and chronic kidney pathologies. Granular, waxy and cellular casts are well characterized. However, a unique type of casts containing non-polarizable lipid-like granules immersed within a lightly granular cast matrix is occasionally found. These casts have been labeled as vacuolated acellular casts (VAC). The clinical significance of VAC is not known. Herein, we present a case series of patients with specimens containing VAC.

**Methods** We utilized an educational social media platform (Twitter) to probe for individual cases of VAC. We surveyed known educators who frequently post microphotographs of MicrExUrSed asking for filed cases of identification of VAC. Demographic and clinical characteristics were extracted and representative images were compiled for correct identification of VAC.

**Summary of Results** Four urine microscopists (2 from Brazil, 1 from India, 1 from USA) contributed to the case series. A total of 17 cases were identified. Images were carefully reviewed to confirm identity of VAC. Median age 56 (15–81), 76% men, 59% had type 2 diabetes mellitus. Median serum creatinine at the time of MicrExUrSed was 3.4 (1.2–6.5) mg/dL. 16/17 (94%) patients had 3+ protein by urinary dipstick. Urine protein-to-creatinine ratio was in the nephrotic range in 9/10 (90%) cases with available value [median 6.7 (1.3–11.7) g/g]. Concomitant findings included hematuria (58%), waxy casts (67%), granular casts (80%), fatty casts (42%) and renal tubular epithelial cells (58%). Histopathological diagnosis was available in 11 cases: 3 diabetic glomerulopathy, 3 focal segmental glomerulosclerosis, 2 transplant glomerulopathy, 1 membranous nephropathy, 1 thrombotic microangiopathy, and 1 advanced arterionephrosclerosis. Greater than 25% interstitial fibrosis was present in 7/11 (64%) cases.

**Conclusions** VAC are a distinct type of casts that can be found in specimens of patients with advanced proteinuric glomerulopathy. The specific origin and composition of these casts remains unknown and requires further study.

**#392H** ICU DE-ESCALATION TIMES PRE AND POST TRANSITIONARY TEAM ADDITION: INSIGHT TO A POSSIBLE QUALITY IMPROVEMENT PROJECT

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10.1136/jim-2022-SRMC.395

**Purpose of Study** On average, an ICU uses three times as many nursing hours per patient compared to hospital wards. Over fifty percent of the direct costs of maintaining an ICU can be attributable to this. When a patient continues to be provided with a resource that is no longer applicable to their needs, medical waste occurs. Nationwide, hospitals are beginning to implement variations of ICU step-down and transitionary care teams.

**Methods** In 2018, the Section of Hospital Medicine within the Department of Medicine at LSUHSC Health Sciences Center in New Orleans implemented a dedicated medical team for the transition of care of patients being de-escalated from the ICU. The time delay between the request for de-escalated care and the actual de-escalation of care was recorded and analyzed pre and post the addition of a transitionary team with 50 patients in each group.

**Summary of Results** After the implementation of a dedicated team, ICU step-down time was reduced by 33%. All delays post addition occurred despite adequate response time from the new care team suggesting outside or non-provider related factors.

**Conclusions** The dedicated internal medicine team responsible for ICU transitions clearly reduced length of stay in the MICU. Early discharges from the MICU to the medical ward reduces costs. A previous study demonstrated that Hospital length of stay decreased without effecting mortality when an MICU based transition team continued to follow patients for 24 hours after transfer to the medical ward. The model studied here reduces stress on the MICU physician work force. We suggest further studies in the UMC ICU de-escalation of care process to reduce costs associated with long ICU step-down delays. The effects of this patient care model on other factors, including length of stay, re-admission and mortality, also require further study.

**#393** ISOLEUVUGLANDINS IN ANTIGEN PRESENTING CELLS PREDICT SALT SENSITIVITY OF BLOOD PRESSURE

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10.1136/jim-2022-SRMC.396

**Purpose of Study** We have shown that Na⁺ enters antigen-presenting cells (APCs) via ENaC. This activates NADPH oxidase and formation of isoleuvglandins (isoLGs), which are highly reactive products of arachidonic acid oxidation. isoLG-adducted proteins generate neoantigens that are presented to T-cells and trigger inflammation in hypertension. The isoLG
response to salt is highly variable in human APCs. In this study, we explored whether the variability in isoLG formation relates to individual salt sensitivity of blood pressure and if isoLGs can be used to predict blood pressure response to changes in salt balance.

Methods Used We measured systolic blood pressure (SBP) and isoLG-containing APCs (dendritic cells [DC], CD14+16+ and CD14+16- and CD14+16+ monocytes) by flow cytometry and a specific antibody, in 10 hypertensive subjects who were off therapy for 2 weeks, before (B) and after in-patient 24 hr salt loading (HI, 460 mmol Na+1) and salt depletion (LO, 10 mmol Na+1 plus furosemide 40 mg x 3).

Summary of Results Age was 50.0 ± 1.9, with 40% female, BMI 34.2 ± 3.5 kg/m² and screening SBP 137.7 ± 4.5 mmHg. Urine Na excretion was 175.2 ± 17.6 in B, 374.2 ± 24.4 in HI, and 28.6 ± 2.9 mmol in LO after furosemide. SBP responses to salt loading varied from -4.7 to 9.1 mmHg and those to salt-depletion from +7.3 to -13.8 to mmHg. IsoLGs were not different among B, HI or LO in any cell type. Baseline isoLGs correlated with changes in SBP (LO minus HI) in all three types of monocytes (p=0.017,0.02 and 0.032 for CD14+16+, CD14+16+ and CD14+16-, respectively) but not in DCs. The response of isoLGs to salt depletion (LO minus HI) correlated with changes in SBP (LO minus HI) in DCs (r=0.65, p=0.04), but not in monocytes.

Conclusions The direct correlation between changes in isoLGs and changes in SBP in response to salt depletion in DCs supports the view that oxidative stress in APCs is directly involved in the causation of the BP responses to changes in salt balance. The reason by which subjects with lower baseline monocyte isoLGs sustain larger reductions in BP during salt depletion remains to be elucidated. Perhaps those hypertensive subjects in whom APC oxidative stress is pre-stimulated by factors other than salt, are more resistant to the effects of salt on BP. In any case, our results suggest that both baseline levels of isoLGs in monocytes and their changes during salt depletion in DCs are predictors of salt sensitivity that could be used as biomarkers. In the case of baseline isoLGs, this would be the first biomarker not requiring a protocol of salt loading and depletion to predict BP responses to salt, potentially making it a useful tool for diagnosis of salt sensitivity of BP in the clinic.

Abstract #394 Table 1
Reclassification tables showing the prevalence per CKD-EPI 2009 vs. CKD-EPI 2021 equations in Black patients and Non-Black patients

<table>
<thead>
<tr>
<th>Black Patients</th>
<th>CKD-EPI 2021 eGFR</th>
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<td>&lt;15</td>
<td>42</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Black Patients</th>
<th>CKD-EPI 2021 eGFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥60</td>
<td>17.039</td>
</tr>
<tr>
<td>45-59</td>
<td>859</td>
</tr>
<tr>
<td>30-44</td>
<td>1,571</td>
</tr>
<tr>
<td>15-29</td>
<td>359</td>
</tr>
<tr>
<td>&lt;15</td>
<td>70</td>
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</tbody>
</table>

Abstract #395 Table 1
Socio-demographic characteristics and fetal, neonatal, and maternal outcomes in relation to the COVID-19 pandemic in Alabama

| Primary Outcomes: The stillbirth and neonatal mortality rate. |
| Setting: Data from the Alabama Department of Public Health, Center for Health Statistics database of Alabama state birth certificates. |
| Objective: To test the hypothesis that the COVID-19 pandemic had an adverse impact on adverse pregnancy outcomes. |
| Purpose of Study: The new Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) glomerular filtration rate estimation (eGFR) equations without the race variable were developed to improve equity in medicine. We characterized the trends in CKD reclassification using the new CKD-EPI 2021 eGFR equation for the outpatients at the University of Mississippi Medical Center (UMMC), the sole quaternary academic center serving the state with one of the highest proportions of Black individuals and highest burden of CKD. |

Methods Used We obtained data from UMMC’s Research Data Warehouse. We included patients ≥18 years with ≥1 outpatient encounter and ≥1 serum creatinine measured from November 1, 2019 to May 8, 2021. We calculated the eGFRs using CKD-EPI 2009 and CKD-EPI 2021 equations and compared the changes in the distribution of CKD stages, overall and by race.

Summary of Results We included 45,308 patients in our study. Mean age was 56 years, 58% were women, 54% Black adults, 32% had diabetes, and 10% had heart failure. Overall prevalence of CKD in our cohort, defined by an eGFR <60 mL/min/1.73 m², was 15.1% when using the CKD-EPI 2009 eGFR, and 15.3% with CKD-EPI 2021 eGFR. Among Black patients, 931 persons who did not have CKD using CKD-EPI 2009 were reclassified to having CKD using CKD-EPI 2021; an overall 3.8% increase in CKD prevalence in Black patients. Conversely, among non-Black patients, 859 persons who had CKD using the CKD-EPI 2009 equation were reclassified to having no CKD with the CKD-EPI 2021 equation, decreasing the overall CKD prevalence in non-Black patients by 4.1%. The CKD-EPI 2021 equation also reclassified more Black patients to a more advanced CKD stage, but increased reclassification of non-Black patients to a milder CKD stage (table 1). With the implementation of CKD-EPI 2021 equation, 54 more Black patients with CKD will be eligible for earlier transplant referral (eGFR <25 mL/min/1.73 m²), whereas the number of eligible non-Black patients will decrease by 37.

Conclusions The CKD-EPI 2021 eGFR increased prevalence of all CKD stages among Black patients and reduced it among non-Black patients. The effects of this change on clinical care, quality, and outcomes need further investigation.
Abstracts

Southern society for pediatric research Plenary session Young investigator award finalists 8:00 AM Friday, February 11, 2022

#395 ASSOCIATION BETWEEN THE COVID-19 PANDEMIC AND FETAL, NEONATAL, AND MATERNAL OUTCOMES: AN ALABAMA POPULATION-BASED STUDY 1V Shukla*, 1A Rahman, 1X Shen, 1A Black, 1N Arora, 1C Lal, 1E Bell, 1A Nakhmani, 1C Zhang, 1N Ambalavanan, 1WA Carlo. 1University of Alabama at Birmingham, Birmingham, AL; 2The Center for Health Statistics, Montgomery, AL; 1University of Iowa, Iowa City, IA

10.1136/jim-2022-SRMC.398

Purpose of Study It is important to identify possible changes in fetal, neonatal, and maternal outcomes in relation to the beginning of the COVID-19 pandemic using population-based data to inform strategies to mitigate the impact of the pandemic on adverse pregnancy outcomes.

Objective To test the hypothesis that the COVID-19 pandemic was associated with a higher rate of stillbirth and a lower rate of neonatal mortality.

Methods Used Design: This population-based cohort study compares two epochs: calendar weeks 9–52 (defined as week one starting on the first Sunday of the year) of the years 2016 to 2019 (baseline period) and 2020 (pandemic period).

Setting: Data from the Alabama Department of Public Health, Center for Health Statistics database of Alabama state residents who delivered in Alabama.

Participants: All pregnant women with stillbirths ≥20 weeks and live births ≥22 weeks gestational age.

Primary Outcomes: The stillbirth and neonatal mortality rate.

Summary of Results Data on 237,625 pregnant women were included; 46,816 were from the pandemic and 190,809 were from the non-pandemic period. Summary of Results:

Abstract #395 Table 1 Socio-demographic characteristics and fetal, neonatal, and maternal outcomes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Baseline Period (2016 to 2019, weeks 9 to 52), N=190809</th>
<th>Pandemic Period (2020, weeks 9 to 52), N=46816</th>
<th>P-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal age, median (Q1, Q3)</td>
<td>27(23, 31)</td>
<td>27 (23, 32)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Maternal education for live births, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;12th grade</td>
<td>14.7</td>
<td>16.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>High school graduate</td>
<td>31.4</td>
<td>33.1</td>
<td></td>
</tr>
<tr>
<td>Some college/associate degree</td>
<td>29.8</td>
<td>28.5</td>
<td></td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>15.3</td>
<td>15.4</td>
<td></td>
</tr>
<tr>
<td>Master’s/PhD/professional degree</td>
<td>8.5</td>
<td>9.3</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>0.19</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Maternal education for stillbirths, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;12th grade</td>
<td>17.5</td>
<td>17.17</td>
<td>0.016</td>
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<tr>
<td>High school graduate</td>
<td>37.2</td>
<td>43.3</td>
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<tr>
<td>Some college/associate degree</td>
<td>26.1</td>
<td>26.0</td>
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<tr>
<td>Bachelor degree</td>
<td>9.8</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>Master’s/PhD/professional degree</td>
<td>5.9</td>
<td>3.67</td>
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</tr>
<tr>
<td>Unknown</td>
<td>3.98</td>
<td>0.79</td>
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<tr>
<td>Maternal race, %</td>
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<td></td>
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<tr>
<td>Black</td>
<td>30.71</td>
<td>30.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4.98</td>
<td>5.21</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>59.84</td>
<td>58.94</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>4.38</td>
<td>5.18</td>
<td></td>
</tr>
<tr>
<td>Adequate prenatal care (Kessner Index), %</td>
<td>59.5</td>
<td>58.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Gestational diabetes, %</td>
<td>5.3</td>
<td>6.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hypertension, %</td>
<td>0.00</td>
<td>11.12</td>
<td>&lt;0.001</td>
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<tr>
<td>Maternal blood transfusion, %</td>
<td>0.31</td>
<td>0.46</td>
<td>&lt;0.001</td>
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<tr>
<td>Uterine rupture, %</td>
<td>0.03</td>
<td>0.05</td>
<td>0.119</td>
</tr>
<tr>
<td>Unplanned hysterectomy, %</td>
<td>0.04</td>
<td>0.05</td>
<td>0.162</td>
</tr>
<tr>
<td>Maternal ICU admission, %</td>
<td>0.12</td>
<td>0.11</td>
<td>0.541</td>
</tr>
<tr>
<td>Maternal deaths, %</td>
<td>62.4</td>
<td>102.5</td>
<td>0.003</td>
</tr>
<tr>
<td>Cesarean delivery (live births), %</td>
<td>34.8</td>
<td>35.1</td>
<td>0.193</td>
</tr>
<tr>
<td>Prenatal steroids coverage for preterm deliveries (≤34 Weeks), %</td>
<td>23.81</td>
<td>54.15</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stillbirth, Per 1000 births</td>
<td>8.9</td>
<td>8.1</td>
<td>0.104</td>
</tr>
<tr>
<td>Birth status, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Births</td>
<td>99.1</td>
<td>99.2</td>
<td>0.104</td>
</tr>
<tr>
<td>Stillbirths</td>
<td>0.9</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Gestational age (live births, N=235377), %</td>
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<td>0.001</td>
<td></td>
</tr>
<tr>
<td>22-27 weeks</td>
<td>0.78</td>
<td>0.74</td>
<td>0.001</td>
</tr>
<tr>
<td>28-31 weeks</td>
<td>1.14</td>
<td>1.18</td>
<td></td>
</tr>
<tr>
<td>32-36 weeks</td>
<td>10.20</td>
<td>10.84</td>
<td></td>
</tr>
<tr>
<td>37+ weeks</td>
<td>87.88</td>
<td>87.23</td>
<td></td>
</tr>
<tr>
<td>Gestational age (stillbirths, N=2075), %</td>
<td>0.00</td>
<td>0.110</td>
<td></td>
</tr>
<tr>
<td>20-27 weeks</td>
<td>54.78</td>
<td>50.66</td>
<td></td>
</tr>
<tr>
<td>28-33 weeks</td>
<td>19.6</td>
<td>24.93</td>
<td></td>
</tr>
<tr>
<td>34-37 weeks</td>
<td>18.77</td>
<td>14.96</td>
<td></td>
</tr>
<tr>
<td>37+ weeks</td>
<td>8.85</td>
<td>9.45</td>
<td></td>
</tr>
<tr>
<td>Gender, male %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live births</td>
<td>51.31</td>
<td>50.91</td>
<td>0.123</td>
</tr>
<tr>
<td>Stillbirths</td>
<td>52.35</td>
<td>53.28</td>
<td>0.742</td>
</tr>
<tr>
<td>Birth weight (grams), M (SD)</td>
<td>3177 (627)</td>
<td>3174 (628)</td>
<td>0.333</td>
</tr>
<tr>
<td>Live births</td>
<td>3188 (609)</td>
<td>3184 (611)</td>
<td>0.203</td>
</tr>
<tr>
<td>Stillbirths</td>
<td>1480 (1051)</td>
<td>1500 (1045)</td>
<td>0.763</td>
</tr>
<tr>
<td>Neonatal intensive care, %</td>
<td>8.59</td>
<td>9.70</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Neonatal deaths, per 1000 live births</td>
<td>4.5</td>
<td>2.8</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
from the baseline period. On bivariate analysis, the stillbirth rate did not differ (8.1 vs. 8.9/1000 births, p-value=0.104), but the neonatal mortality rate was lower (2.8 vs. 4.5/1000 live births, p-value<0.001), and the maternal mortality rate was higher (102.5 vs. 62.4/100,000 births, p-value=0.003) during the COVID-19 pandemic period as compared to the baseline period. On logistic regression analysis adjusting for socio-demographic variables (maternal race, age, education, and prenatal care), the pandemic period was associated with a decrease in stillbirth (OR=0.76, 95% CI=0.64, 0.91, p-value=0.002) and neonatal mortality rate (OR=0.62, 95% CI=0.51-0.75, p-value<0.001) but an increase in maternal mortality (OR=1.64, 95% CI=1.17–2.30, P-value=0.003) as compared to the baseline period.

Conclusions The current population-based study shows that the COVID-19 pandemic period was associated with no change in the stillbirth rate, a lower neonatal mortality rate, and a higher maternal mortality rate compared to the baseline period.

#396 THE EFFECT OF MOM’S OWN MILK ON BODY COMPOSITION, GROWTH, AND MICROBIOME IN VERY LOW BIRTHWEIGHT INFANT

1K McCoy*, 1C Ramirez, 1K Bonaguidio, 1L Winter, 1A Moreira, 1CL Blanco. 1The University of Texas Health Science Center at San Antonio, San Antonio, TX; 2University Hospital San Antonio, San Antonio, TX

10.1136/jim-2022-SRMC.399

Purpose of Study Preterm infants are at risk for metabolic disease. Little is known about the effect of infants’ fed Mom’s own breastmilk (MOM) vs. donor breastmilk (DBM). The primary outcome of this study was to evaluate the effect of type of human milk on body composition; secondary outcomes were growth and microbiome diversity. Our hypothesis was that the percent body fat (BF) would be higher in those fed primarily DBM.

Methods Used Infants ≤1500 g who were fed an exclusive human milk diet (HUM) were enrolled by day of life (DOL) 7. Infants were classified depending on the cumulative amount of MOM and DBM during the 1st month of life. Stool (n=48) and milk [n(KM1) [BCL2] [KM3] =327] samples were collected weekly during the same time period. Stool sample analyses were done by 16S rRNA sequencing; milk macronutrient analyses utilizing Spectrastar, and adiponectin concentration by ELISA. Infants underwent body composition analyses using dual-energy X-ray absorptiometry (DXA) and or PeaPod (PP) at 36 weeks postmenstrual age. A sample size of 32 newborns in each group was originally calculated to obtain 80% power and a two-tailed 5% significance level.

Summary of Results A total of 72 infants were prospectively enrolled with 39 infants in the MOM group and 25 in the DBM. The median gestational age was 28.5 (27, 30, IQR) in DBM infants and 29.4 (27, 30 IQR) MOM infants, p=0.5 and a median BW of 1220 g (1040,1400 IQR) and 1200 g (1060,1345 IQR), p=0.9. There were more infants of a diabetc mother (IDM) in the DBM group (32% vs 31% in MOM) p=0.007. The difference in weight at DOL 7, 14, 21 and 28 was not significant. The% BF using DXA for the DBM and MOM groups were 13 with IQR (9,19 IQR) and 14 (9,18 IQR) respectively, p=0.8; and lean body mass was 2.1 kg (1.94,2.30 IQR) and 2.16 (1.97, 2.38 IQR), p=0.8. Results were similar when utilizing PP. After adjusting for IDM status,%BF and lean body mass remain similar. Total and enteral caloric intake was similar between groups throughout the first month of life. Preliminary human milk macronutrient analyses (n=105 samples) found no differences during the first 3 weeks of life; however, samples at 28 days found differences in fat concentration (9.1±1.9 vs 4.8±3 g/kg/day, p<0.01) and carbohydrates (13±1.4 vs 9.5±4.8 g/kg/day p=0.025), between DBM and MOM; analyses are on-going. Adiponectin milk content was 14.7±10.1 ng/ml in EBM vs 8.9±2.1 p=0.12 in DBM at DOL7 and 9.9±6.4 and 8.3±2.8 p=0.5 at DOL30. While there were slight differences in the microbiome of the two different groups, there was no significant differences in the Shannon diversity index or types of bacteria seen.

Conclusions Despite the many differences that exist between MOM and DBM, our infants had similar%BF, growth, microbiome, and overall milk composition. This is an important finding because MOM’s milk is not always available for VLBW infants. The similarities between body compositions could be due to close growth monitoring/adjustment by our multidisciplinary nutrition team.

#397 PRIVATE OR PUBLIC HEALTH INSURANCE AND INFANT OUTCOMES IN THE UNITED STATES

1DL Johnson*, 1WA Carlo, 2A Rahman, 1R Tindal, 1C Travers, 1The University of Alabama at Birmingham School of Medicine, Birmingham, AL; 2The University of Alabama at Birmingham School of Public Health, Birmingham, AL

10.1136/jim-2022-SRMC.400

Purpose of Study Disparities in the infant mortality rate (IMR) are associated with race, region, and socioeconomic status. Health insurance status is associated with differences in access to healthcare and health outcomes. We hypothesized that among infants born in the United States, maternal private insurance compared with public Medicaid insurance would be associated with a lower infant mortality rate.

Methods Used This ecological study used data from the Center for Disease Control and Prevention (CDC) WONDER expanded linked birth and infant death records database 2017–2018. We included hospital-born infants from 20 to 42 weeks of gestational age (wga) if the mother had either private or Medicaid insurance. We excluded infants with congenital anomalies and infants who died due to congenital anomalies. We used negative-binomial regression adjusted for race, sex, multiple birth, and any maternal pregnancy risk factors (as defined by the CDC) to determine the difference in IMR between private and Medicaid insurance. Chi-square or Fisher’s exact test was used to compare differences in categoical variables between groups.

Summary of Results The study included 6,901,328 infants of whom 3,698,416 (53.6%) had private insurance and 3,202,912 (46.4%) were insured by Medicaid. The private insurance cohort included 334,426 (9.0%) Black infants and the Medicaid cohort included 787,280 (24.6%) Black infants. Infants with private insurance had a lower IMR compared with infants insured by Medicaid (private IMR 2.84/1000 versus Medicaid IMR 5.32/1000; adjusted relative risk (aRR) 0.71; 95% confidence intervals (CI) 0.62 to 0.81; p<.0001). Mothers of privately insured infants had a higher rate of prenatal care starting in the first trimester compared with mothers of Medicaid insured infants (private 85.6% versus Medicaid 66.6%; p<.00001). Rates of any infant morbidity
(per CDC definition) were lower among privately insured compared with Medicaid insured infants (private 13.7/1000 versus Medicaid 19.7/1000; p<.00001). In addition, rates of any maternal morbidity (per CDC definition) were lower among privately insured compared with Medicaid insured mothers (private 6.0/1000 versus Medicaid 13.3/1000; p<.00001). Privately insured infants also had lower rates of preterm birth (private 9.1% versus Medicaid 11.0%; p<0.001), extremely preterm birth (private 0.5% versus Medicaid 0.7%; p<0.001), low birth weight birth (private 7.1% versus Medicaid 9.6%; p<0.001), and extremely low birth weight birth (private 0.5% versus Medicaid 0.7%; p<0.001) compared with Medicaid insured infants. Rates of vaginal breech delivery and antenatal corticosteroid exposure did not differ between groups.

Conclusions Private insurance is associated with a lower IMR compared with Medicaid insurance in the United States.

### Group B Streptococcus β-Hemolysin/Cytolysin Modulates Intestinal Tight Junction Protein Gene Expression

**K Dominguez**, A Lindon, S Darch, T Randis. University of South Florida, Tampa, FL

**Purpose of Study** Group B Streptococcus (GBS) is a leading cause infant sepsis worldwide. Colonization of the gastrointestinal tract is a critical precursor to late-onset infection in exposed newborns. Neonatal GBS intestinal translocation stems from intestinal immaturity (e.g., differentially expressed tight junction proteins (TJPs)) but, the mechanisms by which GBS exploits the immature host remain unclear. β-hemolysin/cytolysin (βH/C) is a highly conserved, pore-forming toxin produced by GBS capable of disrupting epithelial barriers, with unknown roles in intestinal colonization and translocation. In this study, our aim was to determine the contribution of βH/C to the establishment of GBS intestinal colonization and its effects on TJP expression.

**Methods** Used We used our established mouse model of sustained GBS colonization to compare TJP expression in intestinal tissues. Animals were gavaged with GBS wild type strain COH-1 (WT, n=7), its isogenic, βH/C-deficient mutant (ΔβH/C, n=4), or PBS (sham, n=4). Intestinal tissues were harvested at 96 hours post-exposure and processed for determination of bacterial burden and isolation of RNA. We used RT-qPCR to compare candidate TJPs (Marveld2, Cldn2, Tjp-1) gene expression (ΔΔCT method, normalized to β-actin) in the proximal colon and distal small intestine.

**Summary of Results** GBS ΔβH/C did not exhibit a colonization defect as determined by CFU/cm tissue. Marveld2 gene expression was significantly increased in the intestinal tissues of pups colonized with WT GBS as compared to GBS ΔβH/C or sham. Cldn2 gene expression was significantly increased in colonic samples of pups colonized with WT GBS as compared to GBS ΔβH/C or sham. There were no significant differences in Tjp-1 expression among study groups.

**Conclusions** GBS induced changes in Cldn2 and Marveld2 gene expression in intestinal tissues are dependent on the expression of βH/C toxin. Our results demonstrate an important role of βH/C in modulating intestinal epithelial protein expression that may contribute to overall barrier disruption and GBS translocation.

### Impact of Vitamin D on Pulmonary Inflammation in Mice Exposed to Acute Hyperoxia at Birth

**TT Tran**, JL Alcorn. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

**Purpose of Study** Oxygen supplementation is the most important therapy in hypoxic respiratory failure, but excessive O2 concentration can result in hypoxic acute lung injury (HALI). Exposure to high alveolar oxygen concentration result in upregulation of inflammatory cytokines. Vitamin D is known to decrease mucosal inflammation and cytokine response, promote lung epithelial maturation and increase type II alveolar cell production. Premature neonates are at highest risk of vitamin D deficiency. The American Academy of Pediatrics recommend preterm neonates receive 200 to 400 IU/day
while the European Society of Pediatric Gastroenterology and Nutrition recommend 800 to 1000 IU/day, but it is unknown if either dose of vitamin D supplementation can improve HALI sequelae. We hypothesize that administration of vitamin D in neonatal HALI mice model can reduce the inflammatory cascade, mitigate lung injury and improve lung function in a dose-dependent manner.

**Methods Used** Neonatal C57BL/6 mouse pups (day 0) were randomized and placed under normoxic (room air) or hypoxic (85% O2) conditions. Placebo, low (5 ng) and high (25 ng) dose vitamin D were administered at day 2 via gavage. At day 6, lung tissue was harvested for analysis of expression of inflammatory cytokines via RT-PCR, histological analysis, and pulmonary edema via wet/dry lung ratio. Lung sections were stained with hematoxylin and eosin to assess pulmonary structure, mean linear intercept (MLI) and radial alveolar count (RAC).

**Summary of Results** Significant elevation in all pro-inflammatory markers (CXCL1, IL-1β, IL-6, TNF-α), weight loss, pulmonary edema, MLI and a significant reduction in RAC were observed in the hypoxia control group versus the normoxia control group. No significant reduction in cytokine expression as a result of HALI was observed with low or high dose vitamin D intervention. However, vitamin D significantly increased the weight of pups compared to untreated pups in hypoxic conditions. Wet/dry lung ratio significantly decreased in high dose vitamin D group. H&E-stained lung sections show oversimplification of placebo mice exposed to hypoxic conditions. Groups given low and high dose vitamin D in hypoxia show some preservation of alveolar structure. Groups given high dose vitamin D in hypoxic conditions have significantly decreased MLI (133 vs 99, p< 0.001) and increased RAC (1.6 vs 3.2, p<0.001) as compared to placebo group in hypoxia.

**Conclusions** Exposure of neonatal mice pups to 85% O2 for 6 days elicits a profound pro-inflammatory response, reduced weight gain and changes in lung architecture as expected in HALI, validating our murine model of neonatal HALI. Based on our study, vitamin D does not dampen the inflammatory response to HALI but has physiologic effects in improving alveolar structure, reducing pulmonary edema and decreasing weight loss. Our results suggest that in neonatal mice, oral administration of high doses of vitamin D reduces inhibition of airway and alveolar development resulting from HALI.

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**Abstracts**

**#400**

**SEX AND INTRanasal INSULIN INDUCED NEURO PROTECTION AGAINST HYPOXIC ISCHEMIA-INDUCED BRAIN INJURY IN P5 NEONATAL RATS**

C. Glenyde*, J.W. Lee, E. White, A. Castle, V. Quach, S. Lu, S. Lin, N. Ojeda, Y. Pang, A. Bhatt, L. Fan. The University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.403

**Purpose of Study** There is an urgent need for therapies to improve outcomes of premature infants <36 weeks of gestation who have acute hypoxic-ischemic (HI) encephalopathy (HIE). Intranasal administration of Insulin (InInsulin) provides neuroprotection against HI-induced brain injury in postnatal day 10 (P10) neonatal rats; the findings could be extrapolated to full-term human infants. We hypothesized that InInsulin is neuroprotective against HI brain injury HI in P5 rats, which corresponds to the brain developmental stage of premature Infants. We reported that InInsulin reduced HI-induced short-term sensorimotor behavioral disturbances and did not cause hypoglycemia in P5 neonatal rats. We report findings of our further objectives to determine whether InInsulin protected against brain damage and had sex-specific effects.

**Methods Used** P5 Sprague-Dawley rat pups were randomly divided into Sham+Vehicle, Sham+Insulin, HI+Vehicle, and HI+Insulin; all procedures performed in animals were reviewed and approved by the IACUC at the University of Mississippi Medical Center, for the Care and Use of Laboratory Animals published by the NIH), male and female ratio was kept equal. Pups either had HI by permanent ligation of the right carotid artery followed by 90 min of hypoxia (8% oxygen) exposure or Sham surgery followed by room air exposure. Immediately after HI or Sham, rat pups were given insulin (25 µg) or an equivalent volume of the vehicle in each nare under light anesthesia. Brain injury and sensorimotor neurobehavioral tests were determined on P6 in a double-blind manner. Statistical analysis was performed via two-way ANOVA followed by the Holm-Sidak method. The sample size was estimated using power analysis to obtain a difference of 30% between means with a power of 85% and significance of p<0.05.

**Summary of Results** InInsulin attenuated HI-induced sensorimotor dysfunction, including elongation of mean latency times in righting reflex and negative geotaxis, and reduction in response latency times in the hind-limb suspension test and wire-hanging maneuver test (p<0.05, n = 12/sex/group). There was no sex-specific response to HI or InInsulin. InInsulin prevented HI-induced reduction in Nissl+ cells (P<0.05, N=4/group) and increased Fluoro-Jade C+ degenerating brain cells (p<0.001, n= 4/sex/group). InInsulin also significantly reduced HI-induced elevated levels of lipid peroxidation, thio-barbituric acid reactive substance and inflammatory cytokine interleukin-1β (p<0.05, n = 4/sex/group).

**Conclusions** Sex had no impact on the HI-induced short-term sensorimotor dysfunction or benefit of InInsulin. InInsulin reduced HI-induced Nissl+ cell loss, degrading brain cells, lipid peroxidation, inflammation, and short-term sensorimotor behavioral disturbances. Evaluation of changes in astrocytes and oligodendrocyte lineage is in progress. If further pre-clinical research shows long-term benefits, InInsulin has the potential to be a promising non-invasive therapy to improve outcomes of premature newborns with HIE.

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**#401**

**ARTIFICIAL INTELLIGENCE IN ISOLATED HEART CELLS THROUGH PHOTONS CONTROLS THE ELECTRICAL CONDUCTIVITY AND ENTANGLEMENT IN CELL TO CELL COMMUNICATION**

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10.1136/jim-2022-SRMC.404

**Purpose of Study** Measure photonic acceleration of superconduction (S.) and entanglement (E.) across junction gaps in...
isolated heart myocytes through artificial intelligence in fusion of Enalapril and Angiotension II intracelullarly.

Methods Used Cryoplasmic conductivity and E. was measured intracellullarly using the method developed by D. Mello; improving junction gap conductivity (G.I.).

Summary of Results An increase in G.I. of 106% by E. and a reduction of G.I. (55%) was observed by Ang II (1 ug/ml in 4 Min.) without a plateau. This increase by E. produced a significantly coupling of heart cells improving the left ventricular function. These changes occur through photons induced by E.-Ang II intracelullarly at the temperature of 27 degrees cel-sius, probably by an interaction of photons liberated from an internal cloud and moved by electrons.

Conclusions This shows the importance of measuring these parameters induced by artificial intelligence intracelullarly in isolated myocardial cells improving coupling of them and as a consequence a more efficient left ventricular function by improving G.I.

CARDIAC AMYLOIDOSIS: A NOVEL ALGORITHM FOR DIAGNOSIS AND TREATMENT

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Purpose of Study Amyloidosis is a group of disorders that can affect almost any organ due to the misfolding of proteins and deposition in various tissues, leading to various disease manifestations. Cardiac amyloidosis (CA) occurs when the heart is involved.

Methods Used We searched PubMed for landmark trials and meta-analyses related to CA and analyzed these manuscripts to identify key biomarkers, symptoms, genes, imaging findings, and treatments. By utilizing these findings, we composed our novel diagnostic approach for CA.

Summary of Results There are four main types of CA with varying degrees of cardiac involvement: ATTR wild-type (ATTRwt), ATTR mutated-type (ATTRm), secondary amyloid (AA), and acquired systemic immunoglobulin light chain (AL). Presenting symptoms include dyspnea on exertion and fatigue. The initial steps in the diagnostic workup include screening for monoclonal components and bisphosphonate scintigraphy using 99mTc-DPD, 99mTc-PYP, or 99mTc-HMDP should be performed. When there is monoclonal gammapathy or positive scintigraphy, histological diagnosis can be pursued. The biopsy can be obtained from the abdominal fat pad or salivary glands. If these tissues are insufficient for typing or fail to demonstrate amyloid deposition, then a biopsy from an affected organ can be pursued. One of the main biomarkers utilized is the N-terminal fragment of pro-brain natriuretic peptide (NT-proBNP), which is linked to heart failure. A 12-lead electrocardiogram (EKG) is essential in the initial workup of CA and the classic EKG finding is low-voltage criteria defined as the presence of QRS voltage amplitude of ≤1mV in all precordial leads or ≤0.5mV in all limb leads. Echocardiographic findings in CA include concentric thickening of ventricular walls, increased echogenicity, septal hypertrophy, and decreased chamber volumes. Cardiac magnetic resonance imaging (cMRI) can help identify distinct tissue characteristics specific to CA. Nuclear medicine radio-tracers show amyloid deposits in the myocardium and are seen with planar and single-photon emission computed tomography (SPECT) imaging. Figure 1 displays our proposed diagnostic algorithm in suspected and biopsy-proven amyloidosis cases.

Conclusions Cardiac amyloidosis is a rare disorder presenting a diagnostic challenge with early diagnosis significantly impacting outcomes. Utilizing a diagnostic algorithm, such as the one proposed by our group, can make this diagnostic workup more streamlined and potentially lead to more accurately diagnosed cases.

RACIAL DISPARITIES IN PATIENTS WITH HYPERTENSIVE EMERGENCY

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Purpose of Study Hypertensive emergency, defined as a blood pressure ≥ 180/110 mmHg with target organ damage, is a major cause of cardiovascular morbidity and mortality. We characterized cases of hypertensive emergency at a large tertiary-care academic medical center.

Methods Used Utilizing the Patient Cohort Explorer Epic electronic health records (EHR) system at the University of Mississippi Medical Center from 1/1/2013 to 7/31/2021, we identified patients diagnosed with ‘hypertensive emergency.’

Abstract #402 Figure 1 A) Diagnostic algorithm when cardiac amyloidosis is suspected; B) Diagnostic algorithm in biopsy-proven amyloidosis
Sociodemographic factors related to hypertension and patient status (alive/deceased) were also examined. Descriptive statistics were used to examine differences in means across groups.

**Summary of Results** Among patients in the University of Mississippi Medical Center EHR, 2,483 were diagnosed with hypertensive emergency. Among these patients, the mean (SD) age was 52 (17) years, 49% were women, and 82.2% were Black. Nearly half (44.4%) of those diagnosed with hypertensive emergency were uninsured, 46.7% had Medicaid or Medicare, and 7.9% had private insurance. Black patients with hypertensive emergency were significantly younger compared with White patients (51 vs 57 years, p<0.001). There was no significant correlation between race and insurance status in this population. Over the 8 year period, 14.1% were deceased at the time of analysis.

**Conclusions** Among patients admitted to a large academic medical center with hypertensive emergency, most were Black individuals with Medicaid or lacking health insurance. Black individuals present at significantly younger ages compared to White patients. These findings suggest that hypertensive emergency disproportionately affects minority and underserved populations. Further work is needed to characterize risk factors and improve outcomes for this high-risk population.

**Abstracts**

**BEYOND EJECTION FRACTION: NOVEL CLINICAL APPROACHES TOWARDS SUDDEN CARDIAC DEATH RISK STRATIFICATION IN PATIENTS WITH DILATED CARDIOMYOPATHY**

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Purpose of Study This abstract aims to evaluate various imaging tools and novel biomarkers proposed for better risk stratification of arrhythmic substrate, thereby identifying optimal ICD therapy candidates.

Methods Used We conducted a Medline search of ‘dilated cardiomyopathy,’ ‘risk stratification,’ ‘sudden cardiac death,’ and ‘defibrillator’ to identify landmark trials published before April 26, 2021, for inclusion in this review. Trial bibliographies, important practice guidelines, and relevant reviews were examined to ensure the inclusion of relevant trials. The following section reviews data from key trials to investigate novel approaches for stratifying patients with non-ischemic cardiomyopathy for sudden cardiac death.

Summary of Results Implantable cardioverter-defibrillator (ICD) therapy is indicated for patients at risk for sudden cardiac death due to ventricular tachyarrhythmias. The most commonly used risk stratification algorithms utilize left ventricular ejection fraction (LVEF) to determine which patients qualify for ICD therapy. However, LVEF, alone is an imprecise metric to predict sudden cardiac death due to ventricular arrhythmias. Myocardial fibrosis can serve as a substrate for lethal arrhythmias in the absence of reduced LVEF. Thus, novel clinical approaches incorporating genetics and fibrosis assessment using cardiac magnetic resonance imaging or global longitudinal strain by echocardiography may capture at-risk patients missed by LVEF alone.

Conclusions With advancements in genetics, imaging, more robust non-invasive long-term monitoring devices, optimization of electrophysiologic parameters, and artificial intelligence, current guidelines using LVEF as a cut-off for ICD implantation in non-ischemic cardiomyopathy may be the area missing important information. A more pragmatic approach is to use a combination of tools to personalize risk stratification, which would possibly overall reduce cost and mortality by allowing delivery of ICD therapy to those patients who will most likely benefit from it. Combining these newer modalities can provide a more accurate stratification of patients at risk for SCD. A multivariate risk score may be appropriate to make an informed patient decision for ICD implantation for primary prevention of SCD.

**GENETICS IS MORE IMPORTANT IN THE ORIGIN OF THE Atherosclerotic PROCESS IN THE HISPANIC SOCIETY THAN THE COMPLEX OF ANGIOTENSIN II-MONOCYTES-MACROPHAGES AXIS**

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Purpose of Study Atherosclerosis (A.) is a complicated process produced by many factors, including genetic factors, diabetes mellitus, hypertension and others. In Puerto Rico (P.R.) and possibly other Hispanic countries, especially genes which we call ‘protective genes’ (PG.) controls the incidence and degree of this A. process. It is the purpose to study these mechanisms.

Methods Used These genes, whose origins are Europeans, African and Amerindians, described by Duconge and colleges at the University of Puerto Rico. The most important genes reducing this inflammatory process are an admixture of: CYP2C9, VXORC1 and VKORC1>1639>A allele in sector 1. These genes are homogeneous in the full Puertorrikan culture, which shows an evolutionary factor. Another factor is a reduction of monocytes transformation to macrophage producing sub endothelial accumulation in the union of the A. pub by blocking Angiotensin II and cytokines-mechanisms, especially by Losartan. This will reduce the endothelial damage with a reduction of plaques, foam cells and organ ischemia.

Summary of Results We think the PG. are crucial in these mechanisms reducing the origin and progression of the atherosclerotic process, more in P.R. (30%), U.S.A. Island, than in the continental U.S.A.

Conclusions The reduction of damage to the endothelial lining, reducing plaque formation and foam cells, the prelude of severe damage to the endothelium and myocardial damage is mediated through genetics and evolution, reducing the intracellular oxidative stress and as a consequence, a reduction of the atherosclerotic process.
Abstract #406 Figure 1

Purpose of Study Cardiac device and transvenous lead extraction procedures carry a significant risk for mortality. The aim of this study was to determine the risk factors and outcomes associated with cardiac device removal.

Methods Used Patients undergoing cardiac device removal between January 2015 and April 2020 were studied at a single tertiary care center. Baseline characteristics and 60 day outcomes were obtained.

Summary of Results Our cohort consisted of 386 patients (68% men, 61 ± 16 years old, BMI 29 ± 7, 74% Caucasian, 72% Hypertension, 67% Systolic Heart Failure, 53% with current or previous tobacco abuse, 41% Coronary artery disease (CAD), 31% Diabetes (DM), 4% End Stage Renal Disease (ESRD)) with an implantable cardioverter-defibrillator lead removed in 238 (62%). Patients underwent cardiac device extraction for Infectious 217 (56%) and Noninfectious 169 (44%) indications. 60 day mortality occurred in 24 patients (6%). Among these cases, the odds ratio for patients to have an adverse outcome was more likely in the presence of: Systolic Heart Failure (OR 5.4, 1.3–23.4), CAD (OR 2.5, 1.1–6.0), Atrial tachyarrhythmia (OR 2.5, 1.1–5.9), DM (OR 2.8, 1.2–6.4), ESRD (OR 8.4, 2.6–26.5), removal for infection (OR 9.4, 2.2–40.4), bacteremia at removal (OR 3.6, 1.6–8.3). Patients were more likely to survive with the use of a locking stylette (OR 0.3, 0.1–0.8).

Conclusions Cardiac device removal is a high risk procedure. Evaluation of a patient’s co-morbid conditions including bacteremia, reduced ejection fraction, diabetes, renal dysfunction, and CAD can allow providers and patients to better assess risk for mortality.

Adolescent medicine and pediatrics

Concurrent session

2:00 PM

Friday, February 11, 2022

Weight-for-length percentile, weight-for-age percentile, and BMI in children younger than 2 years of age in predicting the development of overweight and obesity in children

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Purpose of Study To evaluate weight-for-length percentile, weight-for-age percentile, and BMI in children less 2 years old in predicting the development of overweight and obesity in children 2, 3, and 4 years old.

Methods Used A retrospective cohort study of children born at University of South Alabama Children’s and Women’s Hospital from May 2011 to October 2013. Included participants had at least one well child visit between ages 2 to 18 months and at least one well child visit between ages 2 to 4 years old. Preterm birth, small for gestational age, and patient with comorbidities affecting growth were excluded from the study. All collected data were organized in an Excel spreadsheet and analyzed using statistical software JMP v 15.2.0. Logistic regression was used to identify predictors of childhood obesity.

Summary of Results There were 1,178 children were identified by ICD codes. A total 612 children met inclusion and exclusion criteria for this study. Included patients were 52% male and 48% female, 81% African American and 19% non-African American, 70% formula fed, 14% breastfed and 16% both formula fed and breastfed, and 91% low socioeconomic status.

At 2 years of age, logistic fit showed significant association between overweight and obesity at this age and each of the following: weight-for-age percentile at 18 months (Log worth $= 3.417, p = 0.00034), BMI at 18 months (Log worth $= 2.318, p = 0.00481), and weight-for-age percentile at 12 months (Log worth $= 1.633, p = 0.02326).

At 3 years of age, logistic fit showed significant association between overweight or obesity at this age and BMI at 18 months (Log worth $= 2.759, p = 0.00174).
Case Report

Inflammatory bowel disease (IBD) is a chronic, autoimmune intestinal disorder consisting of two main entities: Crohn’s Disease (CD) and ulcerative colitis. The role of the intestines in maintaining electrolyte homeostasis has long been demonstrated. Inflammation of the intestinal tract has been shown to cause decreased absorption and therefore derangements of sodium, chloride, and calcium. Many of the crucial ion transporters are located in the epithelium of the intestinal tract, which is affected in IBD. Patients with IBD have also been found to have significantly lower levels of 25-hydroxyvitamin D when compared to the healthy population.

Case presentation

We present the case of a 15-year-old male who originally presented to an outside hospital for a 3-day history of peripheral paresthesia and intermittent fevers, which culminated in severe cramping of his hands and feet. Laboratory studies revealed severe electrolyte disturbances including critically low potassium and calcium levels. He received IV fluids and electrolyte replacement prior to transfer to Le Bonheur Children’s Hospital.

Repeat bloodwork showed a potassium of 2.7 mmol/L, calcium of 6.4 mg/dL, and magnesium of 1.9 mg/dL. He was also found to have an elevated CRP, ESR, and CK. Further studies revealed an undetectable 25-hydroxyvitamin D level as well as an elevated PTH. Initial exam showed cramping of the hands as well as stiffness of the forearms with a mildly distended but non-tender abdomen.

Due to abdominal distension, abdominal imaging was obtained and showed thickening and narrowing of the terminal ileum resulting in partial small bowel obstruction. Due to concern for CD, he was treated with steroids, with improvement in his clinical picture. He responded well to electrolyte replacement and his muscle cramping resolved. Biopsy ultimately confirmed the diagnosis of CD.

Discussion

After a detailed literature review, we believe this represents the first reported case of tetany secondary to IBD. While the patient had mild GI symptoms, the main reason for his hospitalization had no obvious association with his GI tract. However, when considering his overall picture, this can be explained. Due to inflammation in his GI tract, he had impaired absorption and secretion of multiple electrolytes. As his ileum was the main portion affected by inflammation, he was unable to absorb dietary vitamin D, as evidenced by his hypocalcemia, undetectable 25-hydroxyvitamin D level, and elevated PTH. This led to the development of severe muscle cramping with tetany.

Conclusion

While there are multiple reports in the literature of electrolyte derangement secondary to IBD, we present the first known case with progression to tetany. This case illustrates the importance of the GI tract in ensuring electrolyte homeostasis. This case also demonstrates the need to keep a broad differential as IBD can present in a variety of ways.

#408 A PARALYZING CASE OF INFLAMMATORY BOWEL DISEASE

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10.1136/jim-2022-SRMC.411

Purpose of Study

As COVID-19 cases rose in spring of 2020, schools faced the unprecedented challenge of providing safe and effective education during a global pandemic. With most institutions transitioning to remote instruction, teachers, students, and parents had to cope with changes that came with online distance learning (ODL). Children with learning or behavioral disabilities, such as ADHD, may have faced setbacks. The aim of the study was to examine parents’ observations of their children with ADHD transitioning from in-person classroom instruction to ODL in regards to their academic performance and ADHD symptoms during the COVID-19 pandemic.

Methods Used

The study utilized a cross-sectional design and recruited patients from a pediatric clinic in Houston, TX. Participants included parents of school-age children with an ADHD diagnosis. Parents were emailed a novel survey that utilized questions from the Vanderbilt Assessment Scale via Qualtrics in February 2021, and again in May 2021. Responses were anonymously collected until August 2021. Children using ODL during some or all of fall 2020 were included in the study. Parents reported semester grades for fall 2019 and fall 2020, and Vanderbilt Survey responses from the same time frame. Grades were measured on a 0–100 sliding scale, and behavioral responses were weighted (1-symptom decreased, 2-symptom did not change, 3-symptom increased). The study was IRB-approved.

Summary of Results

Eighty-one parents of children in grades 1–12 with ADHD were identified and contacted to take part in the survey via email. Sixty of these parents received follow-up phone calls. Twenty-four started surveys. Twenty-one parent-child dyads met the study criteria, completed surveys, and were enrolled in the study. Semester averages in math, science, language arts/reading, and social studies appeared to all decrease from fall 2019 to fall 2020 (-3.5, -5.3, -2.8, -1.6), with the most prominent decrease in science (p=0.08). Overall, ADHD symptoms varied from fall 2019 to fall 2020. Parents reported increases in the following: lack of follow through with directions and failure to finish activities (62%), forgetfulness in daily activities (57%), and lack of attention to detail and making careless mistakes (57%). Most parents reported no change in relationships. Two-thirds of parents reported that their child did not benefit at all from ODL;

#409 EFFECTS OF ONLINE DISTANCE LEARNING IN THE SETTING OF COVID-19 ON ACADEMIC PERFORMANCE AND BEHAVIORAL SYMPTOMS IN PEDIATRIC PATIENTS WITH ADHD

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10.1136/jim-2022-SRMC.412
Abstracts

However, 10% of parents said their child benefitted from less distraction, and 10% said their child preferred computer-based learning. Parents reported the following challenges with ODL: staying focused/organized and bored (43%), lack of 1-on-1 instruction and ability to ask questions (33%), and social isolation (14%).

Conclusions During the COVID-19 pandemic, pediatric patients with ADHD seemed to perform worse academically in a virtual school setting compared to an in-person classroom. In this same population and time frame, ADHD behavioral symptoms appeared to either increase, especially those that were task-oriented, or remain unchanged.

#410 HDL MAY PLAY A PROTECTIVE ROLE IN THE DEVELOPMENT OF ELEVATED LIVER ENZYMES IN OBSESE ADOLESCENTS

10.1136/jim-2022-SRMC.413

Purpose of Study Childhood obesity is a major contributor to chronic disease, which despite its recognition, continues to grow in the USA and world-wide and is one of the most serious public health challenges of the 21st century. Childhood obesity places adolescents at risk for metabolic syndrome, fatty liver, and other long term complications.

The purpose of this study is to determine which clinical parameters correlate with increased risk of non-alcoholic fatty liver disease (NAFLD).

Methods Used A retrospective chart review of data from patients who attended the University of Florida Adolescent Medicine Subspecialty Clinic at Studer Family Children’s Hospital at Ascension Sacred Heart was conducted. Inclusion criteria were patients from the UF Subspecialty Adolescent Medicine outpatient clinic at the Studer Family Children’s Hospital, ages 12–20 years and a BMI ≥ 85%. Exclusion included patients who have diseases or who were taking medications which can affect liver enzymes.

The main outcome will be whether or not the ALT level is abnormal defined as > 22 for females and >26 for males based on NASPGHAN guidelines.

The following variables were extracted for the study: age, sex, race, insurance, height, weight, BMI, BMI percentiles, blood pressure (and percentiles), ALT, AST, total bilirubin, A1C, lipid panel, (cholesterol, triglycerides, HDL, cholesterol), PHQ9 (as measure of depression), presence or absence of obstructive sleep apnea, asthma, and liver ultrasound results if performed.

Summary of Results There was no significant association between ALT and OSA, depression, asthma, BP, A1C, total bilirubin, cholesterol or LDL. Patients with an abnormal ALT were heavier (P<0.05), taller (P<0.05) and had lower HDL levels (P<0.05). Male subjects tended to have higher ALT levels than females (P < 0.05). Females tended to have higher HDL levels than males overall (P<0.05). ALT and BMI did not show any association initially, but once adjusted for age, sex, race, BP, and PHQ9 score, in the multivariate logistic regression, higher BMI was associated with higher ALT, and increased odds of having abnormal ALT (p<0.05).

Conclusions High HDL was significantly associated with a lower odds of abnormal ALT levels, and seemed to play a protective role in the development of liver dysfunction (p<0.05).

Other clinical features were correlated with elevated liver enzymes, including male sex, white race and higher BMI. Higher HDL were seen in females and females had lower rates of ALT elevation compared to males. This suggests further, the possibility of a protective factor of higher HDL in the development of abnormal ALT levels in females.

#411 SCURVY AND GELATINOUS BONE MARROW CHANGES IN AN ADOLESCENT WITH EATING DISORDER
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10.1136/jim-2022-SRMC.414

Case Report Effects of severe malnutrition, such as bradycardia and electrolyte abnormalities are common in patients with eating disorders. However, specific vitamin deficiencies and symptoms concerning for malignancy are less frequent1. Symptoms of vitamin C deficiency include rash, fever, bruising, anemia and joint swelling. Severe malnutrition can also cause gelatinous transformation of the bone marrow (GTBM), although this is rare2.

A 15-year-old female with history of depression was admitted with knee pain, petechial rash, bruising, and fatigue with years of restricted eating. She reported recent worsening of a leg rash that first developed seven years ago. In the past two months, a rash formed on her wrists with painful, bilateral knee swelling. She had ten months of amenorrhea. She had a restricted diet of bread, cereal, chips, and butter. She was under-weight (BMI 16.3), tachycardic, and had abnormal orthostatic vitals. Exam showed hemorrhagic petechial rash with corkscrew hairs (figure 1) with knee and ankle swelling. She was diagnosed with Avoidant Restrictive Food Intake Disorder (ARFID), however, the differential remained broad including malignancy, autoimmune disorders, and infection.

The rash was classic for scurvy, confirmed by Dermatology. Vitamin C supplementation was started prior to a level being obtained. During her admission, she developed a normocytic
anemia (Hgb 5.1 g/dL) requiring two blood transfusions as well as fevers up to 39.7°C. Hematologic workup was consistent with iron deficiency and anemia of chronic disease. Rheumatology workup was negative. Knee MRI showed patchy enhancement of the calcaneal body, suggestive of leukemia/lymphoma, chronic multifocal osteomyelitis or Langerhans cell histiocytosis. Biopsy showed gelatinous transformation of the bone marrow, secondary to malnutrition.

After two weeks of nutrition and vitamin supplementation, patient’s vitals normalized, rash improved, and knee swelling decreased. She was discharged to an eating disorder program. Ultimately, her presentation was explained by malnutrition and vitamin C deficiency. Vitamin C deficiency and GTBM should remain on the differential in malnourished patients.

**Abstracts**

**#413 HUNGRY HUNGRY BONES: ELECTROLYTE ABNORMALITIES IN THE PRESENCE OF SEVERE MALNUTRITION**

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10.1136/jim-2022-SRMC.416

**Case Report** We present a case of severe malnutrition from child maltreatment that developed into AN, osteoporosis, & persistent electrolyte abnormalities due to hungry bone syndrome (HBS).

We describe a 15-year-old female with a history of medical neglect presenting to the hospital after removal from mother’s home with weakness, inability to sit up or ambulate, bilateral leg pain, & severe malnutrition.

The patient stated that her family had been on a ‘vegan diet’. The patient’s daily diet was two to three bowls of a homemade vegetable soup and two oranges.

The patient stated she felt ‘kinda slim.’ When asked further about weight, she asked if provider was referring to ‘blubber.’ She denied vomiting, diarrhea, constipation, hyper-exercise, or attempts to lose weight. She endorsed laxative use per mother’s recommendation to eliminate ‘parasites’. The patient performed ‘exercises’ with mother’s help including resistance band and isometric exercises. As the patient became weaker, mother increased the ‘exercises’ for the patient to become ‘stronger’; mother pulled on the patient’s legs with bands until the patient ‘felt the burn.’

Patient had been unable to walk for the past year. She used a chair to scoot & no longer sat down to urinate because it would ‘take too long.’ Her menstrual cycles had become infrequent the past year; last period was 5 days before presentation.

The patient’s exam revealed cachexia/temporal wasting, tachycardia, delayed capillary refill, inability to stand or ambulate, limited movement of lower extremities/hips, & inability to sit up comfortably. Patient’s height was 146 cm; she was 63% of median estimated BMI. She had multiple rib and bilateral humerus, scapular, tibial, & metatarsal fractures. The patient was admitted & monitored for refeeding syndrome. She had an elevated parathyroid hormone level (761pg/ml), vitamin D deficiency, hypocalcemia (6.3 mg/dl), & hypomagnesemia (1.5 mg/dl), requiring daily management for weeks. The patient’s DEXA scan was delayed due to the inability to lie flat. When obtained, DEXA demonstrated a total body Z score of -5.9 standard deviations below mean for age. Osteogenesis imperfecta panel was negative.

HBS typically occurs post-parathyroidectomy & is defined by hypocalcemia with total serum calcium <2.1 mmol/L for more than 4 days due to a drop in parathyroid hormone (PTH). In our case, HBS began with secondary hyperparathyroidism after severe malnutrition; PTH increased bone resorption to maintain normal calcium levels. With refeeding, a sudden fall in PTH led to net calcium movement into bones, resulting in hypocalcemia. In patients with HBS, hypomagnesemia & hypophosphatemia may also be observed due to bone formation. Hypomagnesemia & hypocalcemia occurred for our patient & required continuous electrolyte replacement/supplementation. Although rare, providers managing refeeding syndrome among severely malnourished patients should be aware of the risk of HBS and accelerated electrolyte consumption.
Abstracts

#414 SEXUALLY TRANSMITTED INFECTION RATES IN THE ADOLESCENT POPULATION BEFORE AND DURING THE COVID-19 PANDEMIC IN MEMPHIS

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Purpose of Study The COVID-19 pandemic began affecting the United States in early 2020 with many cities instituting stay-at-home orders to prevent spread of infection. Some literature has suggested that sexually transmitted infection rates including gonorrhea, chlamydia, human immunodeficiency virus (HIV), and syphilis have declined during the COVID-19 pandemic due to these stay-at-home orders and school closures. However, sexually transmitted infection data during the COVID-19 pandemic in adolescent children is limited. We conducted this study to determine whether sexually transmitted infection rates in hospitalized adolescents in our institution changed during the COVID-19 pandemic.

Methods Used This study utilized a retrospective chart review of patients ages 14 to 18 years who were admitted to our urban tertiary care hospital both before and during the COVID-19 pandemic. In addition to age, demographic data such as gender, race, and zip code were collected. For each patient, whether or not a patient had a sexual history documented was recorded. Additionally, results of an opt-out infection screen for gonorrhea, chlamydia, HIV, and syphilis were documented. Monthly sexually transmitted infection rates were calculated from January 2019 – February 2020 and March – December 2020 in order to compare the rates prior to and during the COVID-19 pandemic. The McNemar’s test was also used to compare adolescent sexually transmitted infection rates before and during COVID.

Summary of Results There were 321 adolescent patients ages 14–18 years who were screened for a sexually transmitted infection between January 2019 and December 2020 with 52 patients testing positive for one or more sexually transmitted infections. Prior to the start of the COVID-19 pandemic, the average monthly sexually transmitted infection rate was 18%. During the COVID-19 pandemic, the average monthly sexually transmitted infection rate was 18.4%. There was no decrease in the sexually transmitted infection rate in the adolescent patient population during the COVID-19 pandemic when compared to before the pandemic.

Conclusions The study suggests that there was no decrease in the adolescent sexually transmitted infection rate in hospitalized adolescents in our urban tertiary care center during the COVID-19 pandemic. This data shows a trend that is not consistent with some previous research in this area, and may be related to several factors including inability to comply with stay-at-home orders due to social concerns, decreased adolescent supervision, and lack of structured activities due to virtual schooling and cancelation of extracurricular activities. This study underlines the importance of ongoing sexual health and STI screening in this population, especially as the COVID-19 pandemic continues and new surges may lead to similar social concerns. In the future, further research is needed to determine if the results are similar in the emergency department and outpatient settings as well.

#415 BODY COMPOSITION OF VERY LOW BIRTH WEIGHT SMALL FOR GESTATIONAL AGE PREMATURE INFANTS

L. Lach*, K. Chetta, L. Katikaneni, M. Ebeling. Medical University of South Carolina, Charleston, SC

Purpose of Study Optimizing nutrition is important to prevent growth failure, especially in the small for gestational age (SGA) and very low birth weight (VLBW, <1500 g) populations. Premature infant’s body composition differs compared to term infants, as they have higher percent body fat than term infants, and rapidly accumulate body fat after birth. Few studies have reported the body composition of SGA (<10% birth weight for gestational age by Fenton growth curve) VLBW preterm infants using air body plethysmography (ABP). The purpose of our study was to compare the percent fat of SGA and average for gestational age (AGA) infants without major co-morbidities in the VLBW population. We hypothesized that the percent fat of VLBW SGA infants would be lower than AGA infants before and after 60 weeks post menstrual age (PMA).

Methods Used From 2006–2012, 366 infants were admitted to the Medical University of South Carolina Level IV Neonatal Unit and received an ADP (Pea Pod) assessment. A total of 92 VLBW AGA and SGA infants had no major co-morbidities (NEC, ROP Stage 3, IVH 3/4) and were included for analysis. Anthropometrics including length, weight, and head circumference percentiles (Fenton growth curve) were measured at birth and first ADP before 60 weeks PMA. Fifty-seven infants had two ADP evaluations obtained before and after 60 weeks PMA. Groups were analyzed using t-test (α = 0.05) and linear regression (SPSS V. 21).

Summary of Results The average first ADP evaluation was 44 weeks PMA. There was no difference in weight gain (g/kg/day), length or head circumference growth in the SGA versus AGA population from birth to the first ADP evaluation. At first ADP, SGA infants had lower body fat compared to AGA group (9.5% v 14.3%, P<0.001). Of these 57 infants with two ADP evaluations, 14 (24.6%) were SGA and 43 (75.4%) were AGA. Before 60 weeks PMA, SGA infants had less percent fat than the AGA group (14.3% v 18.8%, P=0.004). However, after 60 weeks PMA, there was no difference between percent fat of the two groups (19.2% v 17.8%, P=0.4). Our study looked at secondary outcomes including length of stay, multiples, and race. Longer length of stay in the NICU was associated with higher percent fat (p=0.013). Our study did not find a difference in fat...
percentage before and after 60 weeks PMA for race or multiples.

Conclusions Our data shows that the SGA VLBW group had lower body fat percent before 60 weeks PMA, however after 60 weeks PMA had similar body composition to the AGA group. We found no difference before and after 60 weeks PMA in body composition between singletons, multiples, or race. Future studies should investigate the variables affecting body fat accrual in SGA infants.

#417 PROGRESSIVE DYSPHAGIA AND CHRONIC ABDOMINAL PAIN EXPLAINED BY VASCULAR ANOMALIES: AN UNUSUAL PRESENTATION IN A TEENAGE GIRL

1P Agarwal*, 1M Thompson, 1A Mcclain, L Bart. Ascension Sacred Heart Hospital Pensacola, Pensacola, FL; 1University of Florida, Gainesville, FL

Case Report It is very uncommon to find symptomatic aberrant right subclavian artery (ARSA) and median arcuate ligament syndrome (MALS) in the pediatric population and rarer to find it in the same individual. We present the case of a teenage girl who presented with history of chronic abdominal pain and recent onset dysphagia who was found to have ARSA and later found to have MALS.

Case Description A previously healthy 17-year-old female presented to the ER with dehydration. She had dysphagia for solids and nausea for two weeks with weight loss of six months duration. Examination was significant for epigastric tenderness. Given her history of allergic rhinitis with recent onset dysphagia, she underwent EGD to rule out eosinophilic esophagitis which showed stricture at 18 cm from the pharyngo-esophageal junction, suspicious for a mass compressing the lumen. CT chest with oral contrast showed retroesophageal ARSA. Echocardiography was normal. The patient chose conservative management in that she was able to swallow solids but continued to have nausea and intermittent post-prandial abdominal pain. She then underwent US aorta which showed a short segment (3 mm) narrowing of celiac artery trunk with post stenotic dilatation. The angle of deflection of celiac artery was found to be elevated during end expiration from 66 to 74. Elevated arterial peak systolic velocities (PSV) (>200 cm/s) were noted in both supine inspiration and expiration with resolution of all findings in the erect position.

Discussion A retroesophageal ARSA is the most common congenital aortic arch abnormality, usually asymptomatic, and rarely associated with progressive dysphagia and weight loss, also known as dysphagia lusoria. CTA or MRA is considered the gold standard for diagnosis. Echocardiography is often used in conjunction to evaluate for other anomalies. In some cases, eating smaller meals can provide symptomatic relief. Surgery is not usually indicated but may be needed for severe cases.

MALS is more prevalent in women with a thin body habitus. Patients present with chronic epigastric pain, mostly post-prandial, or exercise induced, with nausea, bloating, weight loss, and fear of the pain triggered by eating, leading to food avoidance. Exam may reveal epigastric tenderness or a bruit that is amplified with expiration. The diagnosis of MALS is challenging and often a diagnosis of exclusion. Doppler flow velocity measurements show a variation in the PSV during respiration greater than 200 cm/s in supine position with return to normal in erect position. Angiography is the gold standard for diagnosing the condition. Surgical decompression is the treatment of choice for symptomatic MALS.

Conclusion This patient had a rare cause of dysphagia and abdominal pain due a combination of ARSA and MALS. A systematic diagnostic approach enabled proper diagnosis. Management is ongoing and may need surgery in the future.
Abstracts

Allergy, immunology, and rheumatology
Concurrent session
2:00 PM
Friday, February 11, 2022

#418 ACTIVATION OF B CELLS AND IMPAIR BALANCE BETWEEN T FOLLICULAR CELLS AND REGULATORY T CELLS INVOLVED IN HIGH FAT-DIET ASSOCIATED LUPUS DEVELOPMENT IN MRL/lpr MICE
1R Patel*, 2J Meng, 3A Ray, 4X Shi, 5T Posea-Mendoza, 6CA Hille, 7L Hellmers, 8R Quinet, 9W Davis, 10J Zakem, 1C Keshavamurthy, 2Y Lei, 3X Zhang. 1Ochsner Medical Center – New Orleans, New Orleans, LA; 2Tulane University Health Sciences Center, New Orleans, LA
10.1136/jim-2022-SRMC.421

Purpose of Study Systemic Lupus Erythematosus (SLE) is an autoimmune disease characterized by persistent inflammation and autoantibodies production, leading to skin and kidney systemic damage. Although not yet fully elucidated, it is known that genetic predisposition and environmental factors such as fat diet/obesity contribute to the pathogenesis of SLE. Our recent data has shown that fat-diet-induced obesity exacerbates lupus symptoms in lupus prone mice, suggesting a unique role of obesity in autoimmune pathogenesis. Here, we investigated the regulatory mechanism of immune cells, especially follicular T helper (Tfh) cells and T regulatory (Treg) cells, that bridge obesity and SLE manifestations in MRL/lpr lupus prone mice.

Methods Used Fifty MRL/lpr mice were fed and grouped in a regular diet (RD, 10% calories from fat) or high fat diet (HFD, 60% calories from fat). Their body weights and skin lesions were recorded weekly. Urine protein was assessed weekly by Bradford assay. Blood was collected monthly for serum IgG, anti-dsDNA antibody, and anti-nuclear antibody (ANA) detection. Mice were euthanized at week 14. Kidney and skin biopsy were embedded and cut onto slides for H&E and PAS staining to detect lupus histopathological lesions and quantified as kidney index and histological skin score. Tfh cells (CD4+CXCR5+ICOS+), Treg cells (CD4+Foxp3+), B cells (B220+), germinal center B cells (GC-B cell, GL7+), plasma cells (CD138+), were examined in spleen by flow cytometry and confirmed in spleen slides using immunofluorescent staining.

Summary of Results The HFD group induced a significant increase in mouse body weight by week 3 and continued until week 14 compared to RD group (p<0.05 to p<0.01). SLE features, such as skin lesions on the dorsum of neck, splenomegaly, proteinuria, high er acute/index of kidney, increased levels of anti-dsDNA antibody and serum IgG titer observed in HFD group. Significant increase of GC-B cells and plasma cells were observed in the spleen of HFD group mice. No difference of CD4+ and CD8+ T cells between HFD and RD mice. The percentage of Tfh cells was significantly increased in HFD group (p<0.05). The ratio of Tfh/Treg was also significantly increased (p<0.05).

Conclusions Our results showed that a high fat diet induced an accelerated and exacerbated lupus development. High fat diet mice had more differentiated B cells and an impaired balance of Tfh/Treg cells associated with increased levels of anti-DsDNA in MRL/lpr mice. This indicates the role of Tfh/Treg as central players linking high fat diet to autoimmune pathology in lupus development. Interventions of healthy diet or restoring balance between Tfh and Treg cells may improve both lupus symptoms and outcomes in genetically predisposed SLE patients.

#419 A CASE OF MOWAT-WILSON SYNDROME & SPECIFIC ANTIBODY DEFICIENCY
M Colon-Leyva*, S Farooq, M Huntwork. Tulane University School of Medicine, New Orleans, LA
10.1136/jim-2022-SRMC.422

Case Report Mowat-Wilson Syndrome (MWS) is caused by a de novo mutation in the ZEB2 gene. Features include intellectual and developmental delays, Hirschsprung disease, and distinctive facies.

Asplenia is present in one patient with MWS; there is nothing in the medical literature about any other immunodeficiencies.

Case Description A four year-old boy with MWS and Hirschsprung’s disease presented for recurrent infections. He suffered frequent infections: gastroenteritis, otitis media, RSV bronchiolitis, Streptococcal pharyngitis, Hand Foot and Mouth Disease, preseptal cellulitis, and influenza.

Infections led to five sets of tympanostomy tubes and adenoidectomy. Due to the frequent bouts of gastroenteritis, including one requiring hospitalization, he had a colostomy at age two.

Previously, the patient had been evaluated for these recurrent infections, and received ‘extra’ DTaP and Pneumococcal vaccines; mother stated the patient had ‘responded well’ to those. Outside records confirmed post-PPSV-23 titers were adequate two years ago.

At the time of our visit, the patient was found to have immunoglobulin levels that were normal. Titers to Pneumococcal strains were protective in only 2/13 stains.

Abdominal ultrasound revealed presence of a normal-sized spleen.

The patient was diagnosed with Specific Antibody Deficiency, Memory Phenotype. The patient was again vaccinated with PPSV-23, and started on antibiotic prophylaxis. Six months later, his pneumococcal titers were 13/14 protective.

Discussion We present a novel case of a child with MWS and Specific Antibody Deficiency, Memory Phenotype. While asplenia has been described in one individual with MWS, there is nothing in the medical literature suggesting that humoral immunodeficiencies are associated with MWS. The patient’s parents know of several other children with MWS around the world who have gotten extra vaccines or who get IgG replacement therapy. This suggests that there may be more to learn about the immune systems of patients with this condition.

We are partnering with the MWS Foundation to disseminate a survey to parents of affected children inquiring about the possible presence of a humoral immunodeficiency. If we do find that other children have been diagnosed with immunodeficiencies or if a significant number of parents or caregivers are concerned about immunodeficiency, then it may be important to investigate further.
**Abstracts**

#420 CASE OF COEXISTENCE OF TWO RARE DISEASES, RHEUMATOID ARTHRITIS AND GRANULOMATOSIS WITH POLYANGITIS

H Qu*, V Majithia. The University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.423

**Case Report**

Granulomatosis with polyangiitis (GPA) is a rare vasculitis affecting small- and medium-sized blood vessels, particularly in the upper respiratory tract, lungs, and kidneys. Rheumatoid Arthritis (RA) is a chronic autoimmune inflammatory disorder that primarily affects the small joints but can have extrarticular manifestations. The prevalence of GPA in adults is estimated to be 30.5 per million, and RA is thought to affect approximately 0.24–1 percent of the population.

**Case Description**

54-year-old Caucasian male with a past medical history of chronic sinusitis status post 2 sinus surgeries, obstructive sleep apnea on CPAP, RA complicated by chronic episcleritis on the left, and hypothyroidism presented in 2015 with facial and periorbital swelling associated with diplopia, eye and ear discharge, and light sensitivity; ESR was elevated at 70 and CRP was 2.5. At the time, patient was taking Humira, which was started one month prior to admission, sulfasalazine, and methotrexate for Rheumatoid Arthritis. Further evaluation revealed significant sinusitis and a positive c-ANCA. Left sphenoidectomy was done and biopsy was consistent with vasculitis and diagnosis of Granulomatosis with polyangiitis was made. The patient was discharged from the hospital with close follow-up and started on prednisone 60 mg, which was slowly tapered off. After discharge, methotrexate was increased from 2.5 mg once weekly to 6 times weekly. The patient received 2 rounds of Rituxan 375 mg per meter squared (approximately 1 mg) once weekly for 4 weeks and 1 round of sulfasalazine every week for 4 weeks. ANCA resolved to negative. The patient was switched to Rituxan 1 g every 15 days in January 2017 and tapered off sulfasalazine. He improved clinically and was able to return to work and participate in weekly exercise. The patient’s Rituxan was decreased to 1 g every 6 months in June 2021.

**Discussion**

Though RA and GPA are rare diseases, there are reports of overlap between the two conditions in the literature. Cyclophosphamide and steroids were used for most of the reported cases with only two using rituximab and steroids. In this case, our patient responded very well from both a RA and GPA standpoint to rituximab and methotrexate.

**Conclusion**

GPA should be considered in patients with pre-existing RA and new signs of vasculitis. Therapy with rituximab and methotrexate should be considered for maintenance therapy.

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#422 PHIP-SEQ’ING ANSWERS; IDENTIFICATION OF NOVEL AUTOANTIGENS IN LUPUS NEPHRITIS

A DeVore*, R Werner, J Oates. Medical University of South Carolina, Charleston, SC

10.1136/jim-2022-SRMC.425

**Purpose of Study**

Lupus nephritis (LN) is a potentially devastating and destructive manifestation of systemic lupus erythematosus (SLE). Different classes (class IV proliferative vs. class V membranous) of LN have varying clinical outcomes and treatments. The mainstay of diagnosis is a kidney biopsy, which helps guide initial treatment but does little to determine overall prognosis or likelihood of relapse. Among factors used to predict disease activity, anti-dsDNA antibodies have a modest relationship to development of end-stage LN but offer little to distinguish between classes. Discovery of additional autoantibodies unique to the subclassifications of lupus nephritis would serve to aid in earlier diagnosis as well as to potentially detect relapses. Our aim is to use a human peptide phage display library to discover novel autoantigens in patient sera that predict LN and the classification (class IV proliferative vs. class V membranous) to better provide insight into disease trajectory.

**Methods Used**

Serum from six pure class IV LN and four pure class V LN patients with biopsy proven, high activity score LN were compared to ten healthy non-autoimmune individuals using immunoglobulin precipitation and bar-coded human peptide phage display technology. Serum shoulder and hip pain. On admission, he was found to have an elevated leukocyte count to 23,800 cells/mm3 and positive blood cultures for Haemophilus influenzae. Physical exam was notable for tenderness to palpation with reduced active and passive range of motion to his right hip and shoulder joints secondary to extreme pain. MRI only demonstrated mild synovial effusions in each joint. Joint aspiration resulted in synovial fluid without bacteria and white blood cells < 15,000 ~ not consistent with septic arthritis but compatible with inflammatory/reactive arthritis. The addition of NSAIDs provided a significant improvement in his symptoms. Late in his hospital course he was found to have a syphilis infection with RPR titer of 1:64. Previous RPR, eight months prior was negative and he was treated for early latent syphilis. By day of discharge, he was able to ambulate short distances with a cane and had achieved limited functional use of his right arm.

**Discussion**

Given the patient’s severe joint pain with limited range of motion, fever, and bacteremia, septic arthritis was initially the top differential diagnosis. However, the joint aspiration results were not consistent with septic arthritis but favored reactive arthritis. This patient lacked any typical associated findings of reactive arthritis such as enthesitis, urethritis or uveitis. However, reactive arthritis is supported by the fact that his joint pains were significantly improved with the addition of NSAIDs late in his hospital course. While the specific etiology of the reactive arthritis in this case is not clear, there is some literature evidence in support of it being either a manifestation of secondary syphilis and/or result of the Haemophilus infection. HIV seems to make patients more susceptible to reactive arthritis via unclear mechanisms, which may partly explain the association with unusual etiologic agents seen here.

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#421 REACTIVE ARTHRITIS, A JOINT EFFORT OF HAEMOPHILUS AND SYPHILIS?


10.1136/jim-2022-SRMC.424

**Case Report**

A 37-year-old man with a past medical history of HIV (CD4 count 464) presented with a 3-day history of severe right shoulder and hip pain. Four days prior to admission, he experienced a fever of 103°F associated with one episode of non-bloody diarrhea. Over the course of the next day, he became progressively immobile due to severe right-sided)...
samples from LN patients were included if they were within 100 days of kidney biopsy. Non-autoimmune controls were matched by sex, self-proclaimed race, and age within ten years of their matched LN cases. CDI Labs HuScan PHIP-Seq Antibody Profiling analyzed the samples allowing identification of antibodies against 29,371 unique human proteins and all of the NCBI v35.1 human proteome. LN autoreactivity was compared to the controls and class IV to class V.

Summary of Results Known SLE autoantigens were identified amongst the LN samples compared to controls (examples: TRIM21, SNRPB, and SNRP70) underscoring the validity and reproducibility of our assay. We also identified novel autoantigens including SCARF2, which plays a critical role in the uptake of acetylated low-density lipoprotein and may be contributory to the increased rate of cardiovascular disease in SLE patients. Additionally, using gene ontology, we identified significant enrichment in LN class V patient samples within the natural killer cell differentiation pathway.

Conclusions Classification of LN samples determines distinct clinical trajectories. Our data indicate some parallels as well as some unique autoantigens between class IV and class V LN. While this data is preliminary, it holds implications in the methods of diagnosis as well as disease trajectory of the subclasses of LN with potential new targets of investigation.

#423 IMPLEMENTING SARCOPENIA SCREENING IN RHEUMATOLOGY CLINICS USING SARC-F QUESTIONNAIRE


10.1136/jim-2022-SRMC.426

Purpose of Study We proposed the following project to evaluate the feasibility of integrating the SARC-F questionnaire into daily practice within a general rheumatology clinic.

Methods Used The project was performed from November 2020 to March 2021 in a single site rheumatology practice. Patients were provided with the SARC-F questionnaire after rooming and were instructed to individually complete it while waiting to see the provider. Scores that were ≥ 4 were considered positive screens and indications for further investigation for sarcopenia at future appointments. Additional information was also collected: age, sex, rheumatologic diagnosis, comorbidities, medications, CRP, ESR, bone density, FRAX, number of hospitalizations in past year, smoking status, and BMI.

Summary of Results Of the questionnaires completed, 41 participants had a positive SARC-F with score of ≥ 4 (41/104, 39%). Of the patients with positive SARC-F questionnaires, 12 patients had a diagnosis of seropositive rheumatoid arthritis (12/41, 29%). The remaining two-thirds of patients with positive questionnaires were comprised of seronegative RA, SLE, PsA, uveitis, sarcoidosis, GCA, polyarthritis, aortitis, polymyalgia, and fibromyalgia (see table 2). Patients with positive SARC-F scores were more likely to be older than 40 years old and female. Elevated ESR also appeared more common in this group (13% vs 37%). Twenty-two of the thirty-seven former

Abstract #423 Table 1 Comparison of patients with positive and negative SARC-F screen

<table>
<thead>
<tr>
<th>Age</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-40</td>
<td>9 (14%)</td>
<td>0</td>
</tr>
<tr>
<td>41-60</td>
<td>19 (32%)</td>
<td>15 (37%)</td>
</tr>
<tr>
<td>61-90</td>
<td>35 (56%)</td>
<td>26 (63%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>45 (71%)</td>
<td>38 (93%)</td>
</tr>
<tr>
<td>Male</td>
<td>18 (29%)</td>
<td>3 (7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25.9</td>
<td>22 (35%)</td>
<td>9 (22%)</td>
</tr>
<tr>
<td>26-35.9</td>
<td>38 (61%)</td>
<td>24 (60%)</td>
</tr>
<tr>
<td>&gt;36</td>
<td>5 (8%)</td>
<td>8 (20%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Documented Smoking Status</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>4 (6%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Former</td>
<td>15 (24%)</td>
<td>22 (54%)</td>
</tr>
<tr>
<td>Never</td>
<td>44 (70%)</td>
<td>18 (44%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prediocrine Use</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current taking</td>
<td>7 (11%)</td>
<td>8 (20%)</td>
</tr>
<tr>
<td>Not taking</td>
<td>56 (89%)</td>
<td>33 (80%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hospitalizations within last year</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Hospitalization</td>
<td>60 (95%)</td>
<td>36 (89%)</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>5 (10%)</td>
<td>2 (5%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESR (High ≥ 2)</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>39 (62%)</td>
<td>21 (51%)</td>
</tr>
<tr>
<td>Elevated</td>
<td>12 (19%)</td>
<td>15 (37%)</td>
</tr>
<tr>
<td>Missing Info</td>
<td>15 (24%)</td>
<td>5 (12%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CRP (High ≥ 8.2)</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>42 (67%)</td>
<td>24 (59%)</td>
</tr>
<tr>
<td>Elevated</td>
<td>8 (13%)</td>
<td>12 (29%)</td>
</tr>
<tr>
<td>Missing Info</td>
<td>15 (24%)</td>
<td>5 (12%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bone Density on DEXA</th>
<th>Negative SARC-F</th>
<th>Positive SARC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal/low density</td>
<td>6 (10%)</td>
<td>10 (24%)</td>
</tr>
<tr>
<td>Osteopenia</td>
<td>21 (33%)</td>
<td>16 (39%)</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>10 (16%)</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>Missing DEXA</td>
<td>28 (44.4%)</td>
<td>9 (22%)</td>
</tr>
</tbody>
</table>

Abstract #423 Table 2 Comparison of rheumatologic and MSK conditions in patients with positive and negative SARC-F screen. Note: some patients have more than one diagnosis which is represented in the chart below

<table>
<thead>
<tr>
<th>Negative SARC-F Patient</th>
<th>Positive SARC-F Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undermined with ANA positive</td>
<td>5</td>
</tr>
<tr>
<td>ANCA vasculitis</td>
<td>3</td>
</tr>
<tr>
<td>AS</td>
<td>3</td>
</tr>
<tr>
<td>Dermatomyositis</td>
<td>2</td>
</tr>
<tr>
<td>IgA</td>
<td>1</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>7</td>
</tr>
<tr>
<td>GCA</td>
<td>0</td>
</tr>
<tr>
<td>General OA</td>
<td>0</td>
</tr>
<tr>
<td>Knee OA</td>
<td>17</td>
</tr>
<tr>
<td>Hand OA</td>
<td>8</td>
</tr>
<tr>
<td>Gout</td>
<td>5</td>
</tr>
<tr>
<td>MCTD</td>
<td>0</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>10</td>
</tr>
<tr>
<td>Palindromic rheumatism</td>
<td>1</td>
</tr>
<tr>
<td>PMR</td>
<td>2</td>
</tr>
<tr>
<td>Polymyalgia</td>
<td>1</td>
</tr>
<tr>
<td>Psoriatic Arthritis</td>
<td>4</td>
</tr>
<tr>
<td>Serositis RA</td>
<td>14</td>
</tr>
<tr>
<td>Serositis RA</td>
<td>5</td>
</tr>
<tr>
<td>Sarcoidosis</td>
<td>2</td>
</tr>
<tr>
<td>Scleroderma</td>
<td>2</td>
</tr>
<tr>
<td>Sjogren's</td>
<td>2</td>
</tr>
<tr>
<td>SLE</td>
<td>1</td>
</tr>
<tr>
<td>UCTD</td>
<td>5</td>
</tr>
<tr>
<td>Urticarial vasculitis</td>
<td>1</td>
</tr>
<tr>
<td>Undifferentiated polyarthritis</td>
<td>0</td>
</tr>
</tbody>
</table>
smokers who completed the questionnaire had positive SARC-F scores. For patients with DEXA on file, patients with osteoporosis appeared to be similar between the 2 groups (16% vs 15%, see table 1).

Conclusions We showed the practicality of using the SARC-F questionnaire within a busy rheumatology practice. As a continuation of this current QI, we will further evaluate the patients with positive SARC-F screenings with grip strength, gait speed, and DEXA body composition to confirm the presence and severity of sarcopenia.

AN UNCOMMON PATHOLOGY IN A SURPRISING LOCATION: BILATERAL BREAST SARCOIDOSIS IN A MALE

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10.1136/jim-2022-SRM.424

Case Report Breast involvement of Sarcoïdosis is very rare and only handful cases had been reported in literature. The initial concern is for malignancy of the breast since the mammogram reveals microcalcifications in both entities. This case involves a 41 year old male with a documented diagnosis of sarcoïdosis. Upon physical exam at a routine office visit, the patient was found to have a left breast mass just superior to the areolar region. The mass was firm, well rounded, non-mobile and tender upon palpation. Mammogram and ultrasound revealed bilateral gynecomastia with suspicious bilateral microcalcifications more pronounced on the left than right with breast asymmetry and a small slightly hyperechoic lesion that was favored to be benign in etiology. Also noted of bilateral gynecomastia. The BRADS score was 4B. Core needle biopsy was performed on the bilateral lesions. Histopathology revealed patchy non-necrotizing granulomas composed of epithelioid histiocytes, macrophages and lymphocytes with microcalcifications and no concerns for malignancy on bilateral samples, figure (1). These findings along with the known history of sarcoïdosis confirmed a diagnosis of breast sarcoïdosis. Because the masses were painful and enlarging a decision to remove them was made and bilateral simple mastectomy was performed successfully.

In most breast sarcoïdosis case reports, the initial presentation was with a breast lump or masses. Conventional imaging methods including mammogram and ultrasound can be confusing as they may show a spiculated mass with microcalcifications on mammogram or a hypoechoic mass with indistinct border as well as enlarged axillary or intramammary lymph nodes. These are findings that can be shared with malignant neoplasms of the breast. Breast MRI has not been shown to provide any additional diagnostic benefit over ultrasound and mammogram to diagnose breast sarcoïdosis or to exclude malignant lesions. Therefore, it only seems prudent to perform a core needle biopsy as the next step after imaging. Non-necrotizing granulomas should confirm the diagnosis after excluding other entities such as malignancy, eosinophilic granulomatosis with polyangiitis, fat necrosis and infections.

The anticipated outcome for these cases is usually surgical removal of the masses as they have been painful and bothersome for the patients. This usually done under general anesthesia with either simple mastectomy or excision and biopsy.

INVESTIGATING THE INCIDENCE OF GCA AND ITS ASSOCIATED ADVERSE OUTCOMES: ISCHEMIC OCULAR EVENTS AND ISCHEMIC STROKE IN HISPANICS

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10.1136/jim-2022-SRM.428

Purpose of Study Giant Cell (temporal) Arteritis (GCA) is the most common form of large-vessel vasculitis where up to a half of all patients with GCA had ocular involvement. Patients with GCA and ischemic ocular events are more likely to have a stroke than those patients with GCA and no ischemic ocular events. Currently it is believed that Hispanic populations have a much lower incident of GCA relative to non-Hispanic white populations based on a small volume of research published on Hispanic populations with GCA in the United States. Little is known about the role GCA and ischemic ocular events has in stroke incidence, especially in Hispanic populations even though Hispanics make up the largest minority ethnicity/race in the US at 18.3% of the population.

Methods Used Retrospective chart review of GCA coded electronic or paper medical records in a self-identified Hispanic population admitted to University Medical Center Hospital (UMC) in El Paso, Texas. We used the guidelines published by the American College of Rheumatology for classification of GCA published in 1990 to confirm GCA diagnoses.

Summary of Results From 2000–2019 we found 67 confirmed new cases of GCA in the Hispanic population of 95,624 admitted to UMC. The incidence rate of Hispanics with GCA admitted to UMC from 2000–2019 is 0.074 with a 95% confidence interval of (0.05, 0.09). The stroke rate of Hispanics with GCA is 7.46% and 11.1% in those with positive temporal artery biopsy but is lower as a percentage compared to subjects with unconfirmed GCA. In subjects with confirmed GCA, 64.18% had ocular involvement with blurry vision (41.79%) and ocular pain (22.39%) the most common ocular symptoms. GCA criteria such as jaw claudication, scalp tenderness, or ESR ≥ 50 mm/hr was not associated with ophthalmologic disease. We find a statistically significant difference in the criteria met for GCA Classic or Tree criteria when comparing those that had a negative TAB, a positive TAB, or no TAB performed, p-value 0.011 and p-value 0.015, respectively.

Conclusions This study shows Hispanics with GCA are prevalent and unique it’s associations with other comorbid diseases. Unlike non-Hispanic white populations, Hispanic subjects with GCA do not show an association with polymyalgia rheumatic nor an increased association with stroke.

Abstract #424 Figure 1 H & E stained histologic section showing non-caseating granulomas (with absent lymphocytic rim) adjacent to breast ductules with apocrine metaplasia. H & E stained histologic section showing non-caseating granulomas (with absent lymphocytic rim) adjacent to breast ductules with apocrine metaplasia.
Purpose of Study: Several studies of environmental exposure have found an association of systemic lupus erythematosus (SLE) and use of hair dye. Vitiligo is found in excess among SLE patients compared to controls. An association of SLE with premature gray hair might explain the association of hair dye with SLE suggesting there is not a cause-and-effect relationship. We undertook this study to determine whether premature gray hair is associated with SLE.

Methods Used: We assembled a large cohort of SLE patients, SLE-unaffected family members and unrelated controls. All SLE patients were demonstrated to meet the 1997 revised American College of Rheumatology Systemic Lupus Erythematosus Classification criteria by interview, questionnaire and medical record review. Family members and unrelated controls were screened for SLE by a validated questionnaire. Family members with answers suggesting possible SLE were interviewed by study personnel and had autoantibodies determined. All subjects were asked, ‘Did all or almost all of your hair turn gray before age 35?’ Those answering ‘yes’ were deemed to have premature gray hair. We compared the groups by Chi square analysis.

Summary of Results: Of 3709 SLE patients, 347 (9.4%) had prematurely gray hair, while 434 (8.33%) of 4774 of SLE-unaffected family members answered ‘yes’ ($\chi^2=2.71$, p=0.1). Among unrelated, matched healthy controls 93 (6.02%) of 1533 had premature gray hair (compared to SLE patients $\chi^2=14.8$, p=0.0001). We also collected data from SLE-unaffected spouses of SLE patients. In this group, 6.8% had prematurely gray hair (40 of 586 compared to 347 of 3706 among SLE patients, $\chi^2=3.56$, p=0.05).

Conclusions: SLE patients had an increased incidence of premature gray hair compared to unrelated controls as well as when compared to their spouses. In contrast, when compared to SLE-unaffected family members, mostly sisters and mothers, there was no difference in the incidence of premature gray hair. Gray hair occurring early in life may have and autoimmune origin may account for the association of SLE to hair dye.
professional language interpretation increases the quality of medical care, both by improving clinical outcomes, and increasing patient/family satisfaction. Unfortunately, consistent use of professional interpretive services is remarkably low across clinical settings and presents a significant challenge to patient safety. The purpose of this study is to describe parent and clinician experiences regarding language interpretive services and perceived barriers to its use.

**Methods Used**

Data were collected from two sources: anonymous caregiver surveys (in English and Spanish) collected at the end of the visit, and anonymous online clinician surveys. Clinician surveys offered multiple areas for free-response answers to questions regarding barriers to use of professional interpretation. Descriptive statistics were performed on all surveys and qualitative analyses of free-response items was performed.

**Summary of Results**

Fifty-one caregivers responded to after-visit surveys. Of these, 45 (88.2%) responded to the English language survey and 6 (11.8%) responded to the Spanish language survey. In total, 36% of respondents reported being asked what language they would prefer to conduct the visit in, with 100% of Spanish respondents reporting they were asked this question and 28.9% of English survey respondents reporting the same (p=0.004). All Spanish survey respondents reported being offered an interpreter, as opposed to only 8.9% of English survey respondents (p<0.0001). Use of an interpreter was reported for 33.3% of Spanish survey respondents in contrast to 4.4% of English survey respondents (p=0.06).

Clinician/staff surveys (n=63) demonstrated no significant differences between front desk staff, nursing, and clinicians with regard to how often each asked for the preferred language of a caregiver. Additionally, these surveys revealed a lack of consistent practices in documenting preferred language and communication of preferred language to nursing and clinicians. Themes from free text responses around barriers to professional interpretation included time, technical difficulties, and lack of a standardized approach for these encounters.

**Conclusions**

This study revealed an important difference in the experience of LEP families at this clinic; families who prefer to conduct visits in Spanish are asked for their language preference significantly more often than families who responded to English surveys. Too improve equity, language preference should be assessed for all patients. These data can inform future interventions aimed to improve interpretive service use.

**#429 ASSESSING IMPLICIT BIAS IN PEDIATRIC CLERKSHIPS**

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10.1136/jim-2022-SRMC.432

**Purpose of Study**

Health disparities lead to poorer health outcomes for people of color and lower socioeconomic status in the United States. Many studies have shown healthcare provider bias can play a role in the propagation of these health disparities. Implicit biases, though unconscious, can be detrimental to patient care, as they are often an automatic mental pathway. These biases then become part of the provider’s regular practice, which is taught to learners, propagating the life cycle of these implicit and ultimately intrinsic biases. Currently, many medical school curricula do not include implicit bias training. By addressing the implicit biases early in medical education, we can begin to take conscious actions to counter these harmful effects. Our objective is to address the paucity of implicit bias training in our Pediatrics Clerkship curriculum by assessing attitudes and beliefs surrounding implicit bias of third year Louisiana State University medical students during their pediatric clerkship.

**Methods Used**

Before meeting, the students take an Implicit Association Test- IAT on race and read a peer-reviewed journal articles on implicit bias and racism in healthcare. During the session, students meet in small groups with faculty as a part of a conference series. We begin by establishing confidentiality and discussing how the students felt about their IAT results. Next, we reflect on implicit bias and whether the participants have seen it in action by utilizing case and essay-based discussions led by faculty facilitators. Following the session, students complete a post-conference survey.

**Summary of Results**

In our initial pilot sessions, the responses from the students in the post-conference survey are overwhelmingly positive. With a 51% response rate, students asked for more time for discussion of personal experiences. They reported this activity provided introspection to their own implicit biases. Many reported the changes they can make in their personal or professional lives, including mindfulness of their patients’ backgrounds and unique circumstances.

**Conclusions**

The initial pilot was done without a pre-conference survey. Moving forward, we have included a pre-conference survey to gather baseline data assessing the students’ comfort with recognizing and addressing their own implicit bias. Data collection for this next phase of the project is still ongoing, but we are excited to complete a more robust qualitative data analysis. Again, we hope to correlate this data with the post-conference survey to make the data more powerful. The strengths of this session are the thought-provoking and open dialogue amongst peers. Faculty development is a key aspect, as effective facilitation is important. However, we feel this session is easily translatable and repeatable at other institutions. With the data and student feedback from our sessions this academic year, we hope to begin this conference at an additional clinical site next academic year.

**#430 TEAM SCIENCE: INCREASING THE PIPELINE OF BLACK, INDIGENOUS, PEOPLE OF COLOR AND WOMEN CONDUCTING CLINICAL RESEARCH**

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**Purpose of Study**

Team science provides an opportunity to leverage a collaborative, cross-disciplinary approach to increasing diversity in academic faculty conducting clinical research. Black, Indigenous, People of Color (BIPOC) and women are underrepresented as academic medicine faculty and clinical researchers. We aimed to increase the participation of BIPOC and women in clinical research through intentional recruitment and determination of invidual team member’s planned participation within an integrated research team.

**Methods Used**

A team investigating COVID-19 characteristics, readmissions, outcomes, and social determinants of health led by BIPOC women researchers was established in June 2020. BIPOC and women from specialties involved in the direct care of COVID-19 patients at eight metropolitan Atlanta...
hospitals and clinic practices were recruited. Specialties included infectious diseases, emergency medicine, hospital medicine, family medicine, and general internal medicine. Team members were of all medical school ranks and levels of research experience. A survey was conducted to collect team demographics and team members’ desired level of participation. Respondents were asked to select their intended level of participation in each of the 5 following categories: data analytics, data collection, manuscript development, abstract development/poster presentation, and serving as a consultant. Each category had options of: none, 1–25%, 26–50%, 51–75%, and 76–100%.

Summary of Results All 37 team members responded to the survey; 78.4% identified as BIPOC, 78.4% identified as women, and 62.2% identified as BIPOC women. In addition to English, 18 languages were spoken by team members. Academic affiliations included 81.1% Emory Healthcare/University School of Medicine, 10.8% Morehouse School of Medicine, 5.4% Kaiser Permanente of Georgia, and 2.7% Atlanta VA Medical Center. Medical school ranks represented among the team were 2.7% Professor, 16.2% Associate Professor, 32.4% Assistant Professor, 13.5% Learners (medical student or internal medicine residents), and 35.2% Other Roles (e.g., data analyst, advanced practice provider). The desired level of participation of respondents in the two categories that included >50% of time were in the following categories: 32.4% data collection, 29.7% manuscript development, 27.0% abstract development/poster presentation, 16.2% data analytics, and 16.2% serving as a consultant.

Conclusions Team science utilizing intentional recruitment and determination of individual team members’ planned participation in an integrated research team is an effective strategy to increase the pipeline of BIPOC and women clinical researchers. Our team created a unique mentorship (and peer mentorship) opportunity that resulted in multiple institutional, regional, and national poster and oral abstract presentations, a successful intramural grant submission, development of three additional ancillary clinical research studies, and submission of three peer-reviewed manuscripts.

THE POWER OF THE SECONDARY SIMULATED PATIENT (SP) OBSERVER IN DIVERSITY EQUITY AND INCLUSION (DEI) SIMULATION

Purpose of Study The challenge of the dual-minded required of simulated participants (SPs), simultaneously portraying an emotional patient or family member while mentally noting elements of the encounter for effective communication feedback, is an industry conundrum. This is especially true with highly emotional encounters. With added elements of assessing learner biases in DEI simulation, observer SPs were incorporated to be able to offer more in-depth empathy assessment as well as bias observations.

Methods Used An established Pediatric Emergency Medicine Fellow Difficult News course was adapted to include DEI elements with an ethnically diverse pool of SP ‘mothers.’ The primary objective was to assess empathy with a validated Jefferson tool. Nine fellows participated in two encounters: the first, establishing an empathy baseline and the second, assessing improvement. An A/B switch model was designed to align/misalign ethnicities among fellows and SPs between encounters. Standard communication feedback was provided post-encounter by both the portrayal and observer SPs. Both completed The Jefferson empathy assessment. Fellows received DEI training between encounters. Recordings of the encounters were reviewed by the same pool of SPs, giving a total of eight different empathy assessments per fellow.

Summary of Results Preliminary analysis demonstrates higher empathy scores in the second encounter presumably because of learning. Trends showed that the portrayal SP scored the fellows higher, despite encounter, if ethnicity aligned. The secondary SP observer assessments were more critical, thorough and honest, and more in line with the observing physician. Private discussions between the lead facilitator and the fellows revealed the learners felt better critiqued by the secondary observers. They also felt as if ethnicity had no bearing on their approach to bad news disclosure. Of note, the SPs did not receive the interim diversity training the fellows did.

Conclusions This study demonstrates the power of observer SPs, who may be more accurate when assessing communication in difficult encounters as they are not ‘in role.’ It also suggests DEI training would be beneficial for SPs as well, to remove potential bias.
A SIX WEEK PROGRAM TO IMPROVE PERFORMANCE ON USMLE BOARD EXAMS
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10.1136/jim-2022-SRMC.436

Purpose of Study Underrepresented medical students are more likely to experience delayed graduation and failure even after Accounting for science GPA and MCAT performance. Moreover, underrepresented medical students are more likely to earn lower scores on licensing examinations. There is an urgency in addressing this disparity as the current climate places underrepresented students at a disproportionate disadvantage regarding specialty choice and residency competitiveness. Due to the history of inequity in science education, minority students are at particular risk during the basic science portion of their preclinical curricula. Institutions should be proactive in mitigating these risks that many underrepresented students will face in their coursework. Although some medical schools have previously implemented interventions for at-risk and underrepresented students, none have developed a comprehensive, analytical approach.

Methods Used We propose an academic support program to close the achievement gap in medical education. We developed an evidence-based intensive, six-week test taking bootcamp that tailors sessions to the individual student’s needs and focuses on analytical skills. Each student completed an NBME exam to establish a baseline score. They completed subsequent NBME examinations to track their progress during the boot camp with the final data point being their Step 1 or Step 2 score.

Summary of Results Implementation of the six-week bootcamp portion of this program in a small cohort of underrepresented medical students (n=6) has shown initial improvement on Step 1 and Step 2, as compared to initial baseline assessments, of more than 40 points each. All students had baseline scores that were below passing and all students ultimately passed their board exams.

Conclusions Underrepresented minorities continue to struggle with board exams, regardless of Pass/Fail scoring. As long as this achievement gap persists, we will continue to have a healthcare workforce that doesn’t reflect our ever-diversifying patient population. Holistic admission must be married to holistic education because the very attributes that set underserved and disadvantaged students apart are the attributes that must be acknowledged, nurtured and incorporated into their medical education. The students in our program saw remarkable improvement. Further studies are needed with a larger cohort to assess the efficacy and reproducibility of the program.
4. Support of the idea that Blacks were a separate and inferior species, suited for labor but not for self-government, using physical anthropology and the new discipline of ‘ ethnology’ to justify their opinions.

5. Use of medical journalism to disseminate and reinforce their opinions.

Leading these efforts was a small, elite group of physicians who typically attended northern medical schools—frequently the University of Pennsylvania—for 2 years, studied abroad (often in Paris), and did brief apprenticeships. These physicians often intertwined anatomy, surgery, and physical anthropology, all in the service of a ‘positive good’ theory of slavery—that the ‘peculiar institution’ was a benevolent one consistent with the Hippocratic ideal of love of humanity and love of the art of medicine.

Exemplars of these elite physicians were Josiah C. Nott of Mobile (who based an elaborate ethnology on the work of the Philadelphia physician-ethnologist Samuel G. Morton); Samuel Cartwright of Huntsville, New Orleans, and Natchez, who published articles on ‘slave medicine’ and slave-specific diseases; Erasmus Darwin Fenner of New Orleans, who created medical journals to promote proslavery ‘science’; and John Y. Bassett of Huntsville, William Osler’s ‘Alabama Student,’ who wrote polemics in favor of slavery and the idea of polygenesis.

Abstract #434 Figure 1

Conclusions We conclude that we cannot afford to ignore the legacies of these men, who were all well-regarded in their communities and in the American South. Their legacies summon us to reflect on how we, too, share biases, and to ask how we might do better.
#435 Trends and Cost Burden Analysis of Inpatient Fecal Occult Blood Testing in Upper GI Bleed

HS Brat*, J Kang, P Batrina, E Paine. The University of Mississippi Medical Center, Jackson, MS

Purpose of Study: This study aims to investigate the trends and utility of testing patients with FOBT for GI bleed and the economic burden. Fecal Occult Blood test (FOBT) is a guaiac-based test involving oxidative reaction with the heme portion and helping diagnose colorectal cancer (CRC). While evidence supports the use of FOBT in CRC screening, providers use it for non-validated purposes, including the evaluation of suspected acute upper GI bleed (UGIB). The sensitivity of the test is poor, ranging from 30% to 37%. FOBT is associated with a high incidence of false-positive/type I error (10% to 15%) and false-negative/type II error (30% to 50%). The false-positive occurs from ingested blood from extra-intestinal sources, intestinal mucosal inflammation, and foods containing peroxidase (broccoli, cauliflower). The false-negative occurs from low, small volume bleeding and with ingestion of substances inhibiting oxidation (vitamin C).

Methods Used: We performed a retrospective observational study of all inpatients older than 18 years who received the FOBT test at the University of Mississippi Medical Center (UMMC) from January 3, 2013, to December 31, 2019. Patient Cohort Explorer was used to obtain de-identified patient data from EPIC. We obtained the number of encounters and patients on whom the FOBT test was performed. Coding and billing offices provided the self-pay cost per FOBT test (CPT code 82270) at $74 in 2020.

Summary of Results: FOBT was done 7,422 times in 6,319 patients during 7,344 encounters between 2013 and 2019. 2,660 (35.87%) tests were positive, and 4755 (64.12%) tests were negative. 1205, 1098, 1067, 1242, 1206, 886, 718 FOBT were done from 2013 to 2019 respectively. 5,492 (74.8%) patient encounters had the FOBT done once, while 595 (8.1%) patient encounters had the test done twice and 202 (2.8%) thrice, with a maximum of 7 times ordered on one patient. 3,576 (48%) and 3846 (52%) tests were done in female and male patients, respectively. 4,528 (61%) tests were done in African American patients, 2,727 (37%) tests were done in Caucasians, while 135 (2%) tests were done in patients with other races. The estimated total cost of all inpatient testing at a self-pay cost of $74 per FOBT was $549,228. On average, $78,461 was spent per year on FOBT. There were additional costs in people testing positive with further workup including colonoscopies.

Conclusions: FOBT is validated for outpatient colon cancer screening tool and not for inpatient evaluation of acute GI bleed. With the poor PPV for a positive FOBT in an acute GI bleed, there is a potential risk for unnecessary procedures with added indirect procedural costs. Conversely, a negative FOBT gives a false sense of security, resulting in under-treatment. Until further research substantiates the utility of FOBT for this purpose, we would recommend against the routine use of FOBT for evaluating UGIB in hospitalized patients to reduce the diagnostic burden and health care costs.

#436 Histopathological Analysis of Interstitial Cells of Cajal and Neuromuscular Bundles in Pyloric Smooth Muscle in Patients with Refractory Gastroparesis Versus Control

1K Takigawa*, 1H Gomez, 0 Padilla, 2K Espino, 1i Sarosiek, 1M Bashashati, 1R McCallum, 1Texas Tech University Health Sciences Center El Paso Paul L Foster School of Medicine, El Paso, TX; 2Texas Tech University Health Sciences Center El Paso, El Paso, TX

Purpose of Study: Gastroparesis (GP) is a neuromuscular dysfunction defined as delayed gastric emptying in the setting of no mechanical obstruction. The pylorus has been recently recognized as the focus for explaining the pathophysiology of GP. We investigated whether there is a difference in the number of Interstitial Cells of Cajal (ICC) and small nerve bundles (SNB) in the pyloric sphincter muscularis propria between GP patients and controls.

Methods Used: A retrospective study was performed to analyze biopsies of the pylorus of ten (10) drug refractory GP patients, who had undergone surgery to perform pyloroplasty and implantation of a gastric electrical stimulation system (GES). In addition, to address the challenge of analyzing ‘normal pyloric tissue,’ autopsy specimens were obtained from 9 cases of non-GP, non-diabetic patients. Tissues were fixed and processed at our academic medical center and stained with CD117 immunohistochemical stain and S100 proteins. A pathologist with the help of medical students evaluated the samples blindly counting ICCs and SNBs per 40X high power field (HPF) with the understanding that both may be reduced among GP patients. Mann Whitney U test for non-parametric data was used to compare GP cases versus control.

Summary of Results: The mean age of patients with GP and control were 45 (32–67) and 55 (31–66) respectively. Approximately 77% of our GP patients were female, while 22% of our control subjects were female. Mean number of pyloric ICCs in GP patients was significantly depleted while compared to controls 5.9 vs. 10.0 (p= 0.02). Also, there was significant reduction in the number of SNBs in GP patients compared to controls 9.8 vs. 23.4 (p=0.005).

Conclusions: GP is predominantly a neuromuscular GI motility disorder, with the main etiologies being diabetes mellitus, vagal nerve damage or idiopathic origin. Until now, there

Abstract #436 Table 1

<table>
<thead>
<tr>
<th>Pylorus</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td>ICCs</td>
<td>GP</td>
<td>5.9</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td>10.0</td>
</tr>
<tr>
<td>SNBs</td>
<td>GP</td>
<td>9.8</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td>23.4</td>
</tr>
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</table>

Analysis

<table>
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<tr>
<th></th>
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<tr>
<td>U- Value</td>
<td>16</td>
<td>U-</td>
</tr>
<tr>
<td>p-value</td>
<td>0.02*</td>
<td>0.005*</td>
</tr>
</tbody>
</table>

SD: standard deviation, * indicates statistically significant difference using Mann Whitney U test.
was a lack of data showing the status of ICC and NBR in pyloric smooth muscle of ‘healthy’ stomach. Utilization of gastric and pyloric autopsy specimens permits a comparison of pyloric smooth muscle tissue in GP versus controls. The significant difference seen in the ICCs and SNBs gives us insight into the histological changes in severe GP and provides a histopathological diagnostic criteria for GP, as well as establishes normal or ‘control’ data for the pyloric sphincter smooth muscle. Our data provide a rationale for treating pyloric sphincter dysfunction with surgical pyloroplasty in GP patients.

### Abstract #437 Table 1 Anthropometric data, demographics and nutritional data

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Male N=77</th>
<th>Female N=74</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Gestational Age</td>
<td>34.08</td>
<td>34.01</td>
<td>0.48</td>
</tr>
<tr>
<td>Corrected Gestational Age</td>
<td>35.11</td>
<td>34.98</td>
<td>0.23</td>
</tr>
<tr>
<td>Birth Weight in grams</td>
<td>2342.25</td>
<td>2081.24</td>
<td>0.001</td>
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<tr>
<td>Birth Weight Percentile</td>
<td>51.2</td>
<td>45.9</td>
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</tr>
<tr>
<td>Weight at study in grams</td>
<td>2350.00</td>
<td>2079.99</td>
<td>0.001</td>
</tr>
<tr>
<td>Weight Percentile at study</td>
<td>35.36</td>
<td>28.66</td>
<td>0.07</td>
</tr>
<tr>
<td>Birth Head Circumference Percentile</td>
<td>55.28</td>
<td>27.8</td>
<td>0.19</td>
</tr>
<tr>
<td>Head Circumference Percentile at study</td>
<td>47.33</td>
<td>43.77</td>
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</tr>
<tr>
<td>Birth Length Percentile</td>
<td>58.58</td>
<td>49.63</td>
<td>0.051</td>
</tr>
<tr>
<td>Length Percentile at study</td>
<td>57.82</td>
<td>48.31</td>
<td>0.03</td>
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</table>

#### Nutrition Data and Demographics.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Males’ N-77</th>
<th>Females’ N= 74</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race (African American)</td>
<td>78%</td>
<td>84%</td>
<td>0.52</td>
</tr>
<tr>
<td>Mode of delivery (C-section)</td>
<td>47%</td>
<td>58%</td>
<td>0.19</td>
</tr>
<tr>
<td>Maternal Diabetes</td>
<td>21%</td>
<td>11%</td>
<td>0.12</td>
</tr>
<tr>
<td>Maternal Preeclampsia</td>
<td>27%</td>
<td>28%</td>
<td>1.00</td>
</tr>
<tr>
<td>IVH</td>
<td>3%</td>
<td>0</td>
<td>0.49</td>
</tr>
<tr>
<td>ROP</td>
<td>0</td>
<td>0</td>
<td>NS</td>
</tr>
<tr>
<td>NEC</td>
<td>1%</td>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>BPD</td>
<td>0</td>
<td>0</td>
<td>NS</td>
</tr>
<tr>
<td>Duration of study</td>
<td>6.1 ± 3.2</td>
<td>5.9 ± 2.8</td>
<td>0.69</td>
</tr>
<tr>
<td>Mean volume (ml/kg/d)</td>
<td>135.3 ± 19.3</td>
<td>145.5 ± 20.8</td>
<td>0.002</td>
</tr>
<tr>
<td>Mean Protein (g/kg/d)</td>
<td>2.90 ± 0.45</td>
<td>3.07 ± 0.48</td>
<td>0.02</td>
</tr>
<tr>
<td>Mean calories (kcal/kg/d)</td>
<td>100.3 ± 14.4</td>
<td>107.8 ± 15.5</td>
<td>0.002</td>
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<tr>
<td>Growth velocity (g/kg/d)</td>
<td>6.1 ± 6.73</td>
<td>8.40 ± 7.66</td>
<td>0.052</td>
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</tbody>
</table>

**Purpose of Study** Since very preterm infants cannot regulate their oral intake of feeds, clinicians prescribe similar amounts of calories and protein for both male and female preterm infants via nasogastric route. This leads to loss of sex specific...
body composition at term corrected gestational age. There are no studies in the preterm infants to demonstrate the sex differences in nutritional consumption. We studied if the volume and nutrient intakes will differ between sexes in late preterm infants who are feeding formula ad libitum.

**Methods Used** A retrospective study of preterm infants (34 0/7 to 36 6/7 weeks of corrected gestation), who are spontaneously ad lib feeding formula milk & free of any respiratory support for at least 2 days & excluded those with a short gut syndrome, severe chromosomal anomalies, or congenital heart conditions. Data collected: sex, gestational age, birth weight, anthropometric data at birth at the start of the study, and at the end of the study, maternal data, nutritional intake: mean volume (ml/kg/d), mean protein (g/kg/d), and mean calories intake (kcal/kg/d) during the study period, and any neonatal morbidity. Independent T test and chi square tests with a priori significance of <0.05 were used for analysis.

**Summary of Results** We included 85 female and 85 male preterm infants in our study. Mean volume & calorie intake was significantly more in females. Demographics and nutritional data appropriate for gestational age (AGA) are shown in the figure. Mean volume, protein & calories intake was significantly higher in AGA female infants than in AGA male infants. Mean ad lib feeding duration was not different between the sexes. Growth velocity was higher in female infants 8.40 ± 7.66 vs 6.1 ± 6.73 in males (p=0.05). There was no significant morbidity in any of the groups.

**Conclusions** This is the first study in late preterm infants to show the sex differences in formula milk consumption. AGA female preterm infants consumed more volume, protein, and calories than AGA male preterm infants. Future sex-specific nutrition studies in very early preterm infants are urgently needed to understand & promote optimal body composition.

### INTRAOPERATIVE AND LONG-TERM EFFECTS OF SURGICAL PYLOROPLASTY ASSESSED BY ENDOFLIP IN PATIENTS WITH SEVERE GASTROPAESIS AND RELATIONSHIP TO CLINICAL OUTCOME AND GASTRIC EMPTYING OUTCOMES

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10.1136/jim-2022-SRMC.442

**Purpose of Study** Gastroparesis (GP) is a condition characterized by delayed gastric emptying in the absence of mechanical obstruction. The main etiologies are diabetic neuropathy, vagal nerve injury, and idiopathic. Patients may not respond to medical therapies and require surgical and endoscopic interventions to alleviate symptoms.

EndoFLIP (Endoluminal Functional Luminal Imaging Probe) is a device that provides real-time measurements of cross-sectional area, pressure, and distensibility of gastrointestinal (GI) sites. With this information, immediate evaluation of interventions can be performed while conducting an endoscopic procedure. EndoFLIP use has been well documented at the lower esophageal sphincter, but there is limited experience with the pyloric sphincter. EndoFLIP could provide crucial investigative data to determine prognostic outcomes in the treatment of GP patients.

The goal of this study is to assess the pathophysiological characteristics of the pyloric sphincter using EndoFLIP in severe GP patients and determine the changes in EndoFLIP and clinic outcomes following pyloroplasty (PP).

**Methods Used** Ten patients with GP failing all medical therapies were evaluated at our academic GI motility center. Laparoscopic robotic PP with additional gastric stimulator placement was performed. EndoFLIP was used to measure the distensibility and diameter of the pylorus before and after the surgical intervention at an inflated volume of 40 mL of saline. Scintigraphic gastric emptying assessment and symptom status using Gastroparesis Cardinal Symptom Index (GCSI) were also evaluated.

The study involved 8 female and 2 male patients, ages 35 to 77, placed into two groups. Group 1 underwent EndoFLIP pre- and post-PP at the time of surgery. Group 2 underwent EndoFLIP study up to 4 years after PP.

**Summary of Results** In Group 1, the mean GCSI score was 3.4, with a range of 2.5 to 3.8. Mean distensibility was 8.77 mm2/mmHg (SD: 3.73) and diameter was 14.14 mm (SD: 3.88). Mean post-intervention distensibility was 9.91 mm2/mmHg (SD: 5.85) and diameter was 18.92 mm (SD: 2.61).

In Group 2, the mean baseline distensibility was 8.03 mm2/mmHg (SD: 3.92) and diameter was 16.27 mm (SD: 3.61). There had been a 67% subjective symptom improvement (range:10–99%) since patients underwent PP and stimulation. Gastric emptying had improved and two patients normalized.

Using the Student’s paired t-Test, Group 1’s distensibility immediately post-PP was compared with Group 2’s baseline and was not significantly different (t = 0.218).

**Conclusions** Pyloric sphincter distensibility and diameters were improved immediately after surgical PP in patients with severe GP. The post-PP distensibility in the acute PP group vs. long-term PP patients indicated no significant difference. We conclude that EndoFLIP can be used to confirm that PP was effective in improving distensibility and diameter in severe GP and that long-term EndoFLIP data supports sustained efficacy for PP. However, given the small patient numbers, a larger study should be performed.

### RESTORATION OF IMMUNE CELLS AND RESOLUTION OF INFLAMMATION AFTER REPLENISHMENT OF VITAMIN C IN PATIENT WITH CHRONIC GRANULOMATOUS DISEASE TREATED WITH ALLOGENIC STEM CELL TRANSPLANT

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10.1136/jim-2022-SRMC.443

**Case Report** Vitamin C’s role in collagen synthesis has been well documented and in recent years its role in immune cell function and proliferation has been investigated. Findings have shown that Vitamin C promotes neutrophil function and motility as well as lymphocyte proliferation. Vitamin C’s role in patients with diseases of inherited immune dysfunction, such as Chronic Granulomatous Disease (CGD), has demonstrated decreased infection incidence and improvement in inflammation. In this case report, we discuss a patient with CGD status post allogeneic hematopoietic stem cell
Abstract #439  Figure 1  WBC and ANC (10^3/μL) trends prior to and after Vitamin C supplementation initiation. Vertical line represents the initiation date of April 3. Patient received Neupogen therapy numerous times between Feb 9 and April 3 to keep ANC >1500 10^3/μL, last dose of Neupogen April 3 after ANC remained above 2000 10^3/μL for 3 days. Patient no longer required Neupogen therapy after Vitamin C therapy started.

transplant suffering from severe mucositis, neutropenia and hypogammaglobulinemia. He was diagnosed with Vitamin C deficiency and showed marked mucosal and immune cell recovery following initiation of Vitamin C therapy. Mechanisms of our patient's recovery as well as utility of Vitamin C supplementation in patients with CGD and post-transplant are discussed.

#440 NECTROTIZING PANCREATITIS SECONDARY TO COVID-19


Case Report A 29-year-old male with a past medical history significant for severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) infection presented with epigastric pain, vomiting, fever, and inability to tolerate oral intake for 1 day. The patient was diagnosed with COVID-19 six weeks prior to presentation and four weeks later was diagnosed with idiopathic acute pancreatitis. He reported initial resolution of pain, however symptoms recurred for one day prior to this admission. The patient denied a history of alcohol use disorder. He is a lifetime nonsmoker. He does not take any medications. Vital signs were stable and he was afebrile. Labs on presentation were remarkable for elevated lipase of 1,527 and leukocytosis (23,000). The patient was still positive for COVID-19. However, he maintained oxygen saturation >95% on room air with no apparent distress. On physical examination, he had severe tenderness to palpation at the epigastrium and left upper and lower quadrants. Abdominal ultrasound had no evidence of gallstones. Triglyceride levels were within normal limits. CT abdomen showed necrotizing pancreatitis. MRCP showed evidence of acute pancreatitis with peripancreatic acute necrotic collection in the pancreatic head measuring up to 8.8 cm. Intrinsic T1 signal within the peripancreatic collection compatible with hemorrhagic pancreatitis. There was about 30% pancreatic parenchymal necrosis in the pancreatic head. A nonocclusive thrombus involving the main portal vein was also seen. Autoimmune workup was negative. In the setting of hemorrhagic pancreatitis, treatment with anticoagulation was deferred. The patient was treated with supportive measures, including intravenous fluids and adequate pain control with eventual advancement of his diet. He was started on empiric antibiotics and discharged for outpatient follow-up.

SARS-CoV2 is known to cause many extrapulmonary effects, including transaminitis, myocarditis and pericarditis. There have been rare cases of SARS-CoV2-induced acute pancreatitis reported in the literature. The exact mechanism behind pancreatic injury in the setting of SARS-CoV2 infection remains unclear, but it is hypothesized that it may occur secondary to the presence of SARS-CoV2 receptors on the pancreas. The main receptor used by SARS-CoV2 is angiotensin-converting enzyme 2, which is also expressed in the GI tract. The most common causes of acute pancreatitis, including alcohol abuse, gallstones, medications and autoimmune causes were ruled out in our patient. In a patient with no particular risk factors, it is likely that SARS-CoV2 precipitated his first episode of acute pancreatitis. Moreover, it is well known that acute pancreatitis can commonly lead to necrotizing pancreatitis as the initial injury and inflammation from the first attack can cause the pancreatic tissue to necrotize and later become infected. This case highlights that SARS-CoV2 can be a possible etiology of acute pancreatitis and its local complications.

#441 POTENTIAL DRUG INTERACTION BETWEEN SUCRALFATE AND DDAVP IN A PATIENT WITH DIABETES INSIPIDUS

S Javadi, J Barbara*. Our Lady of the Lake Regional Medical Center, Baton Rouge, LA.

Case Report We report on a 4-year-old male with a complex medical history including primary diabetes insipidus, secondary adrenal insufficiency, central hypothyroidism, and G-tube (GT) dependence who was initially admitted with an upper GI bleed associated with gastritis and then developed hypernatremia following sucralfate and DDAVP administration. The patient presented to the Emergency Department (ED) after his mother found blood when flushing medications through the tube. There was high suspicion for an upper GI bleed based on physical exam and lab findings, so patient was admitted and started on pantoprazole and sucralfate. Home medications were continued as well, including DDAVP. His sodium at admission was measured to be 140 mmol/L. On day 2 of hospital stay, sodium level increased to 155 mmol/L, and urine output was also increased. In a previous admission, it was noted that the patient had hypernatremia when he was started on sucralfate even when DDAVP dose was appropriately dosed and increased. There was suspicion that the hypernatremia was a result of malabsorption of DDAVP associated with sucralfate. Therefore, sucralfate was discontinued, and patient’s sodium level and urine output improved to normal range. Following this case, research into sucralfate and DDAVP showed there is no formal documentation of any drug interactions between the two medications. We report this case to...
expanding upon the mechanism of action that led to this patient’s hyperammonemia and the possible interactions between sucralfate and DDAVP.

**Abstract #441 Figure 1**

**AZATHIOPRINE INDUCED HEPATOTOXICITY-A POSSIBLE DRUG REACTION**

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10.1136/jim-2022-SRMC.446

**Case Report** Common side effects from azathioprine include nausea, rash, and bone marrow suppression. Hepatotoxicity is relatively uncommon with incidence between 0.3–10%. Common side effects from azathioprine include nausea, rash, and bone marrow suppression. Hepatotoxicity is relatively uncommon with incidence between 0.3–10%.

**Case presentation** A 67-year-old female with multiple cardiac and lung comorbidities and chronic kidney stage 3 presented with ‘feeling unwell’ and decreased intake. Patient had a history of seropositive rheumatoid arthritis, and received rituximab (3 cycles), methotrexate, hydroxychloroquine and leflunomide. One week before admission, leflunomide was switched to azathioprine. On presentation laboratory work showed leukocytosis, hyponatremia, elevated kidney function tests Liver function tests showed bilirubin 9.3 mg/dl, ALP 1249 IU/L, ALT 140 IU/L, AST 518 IU/L, GGT 751 IU/L. PT and PTT elevated. CT Abdomen showed cholecystectomy, minimal intrahepatic ductal dilatation in the right hepatic lobe, no common bile duct dilatation. MRI showed no biliary dilatation. The pancreatic duct was unremarkable. Autoimmune workup was negative. Hepatitis panel was negative. The hyponatremia improved with isotonic fluid. Azathioprine was held and N acetyl cysteine was switched to DDAVP.

**Discussion** Siramolpiwat et al. described thiopurine-induced hepatotoxicity as being due to the inhibition of DDAVP synthesis. DDAVP is an agonist at the V2 receptor on the kidney collecting duct, and thereby causes water retention.

**Abstract #442 Table 1** Laboratory values during hospital stay

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<td>ALP</td>
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<td>1044</td>
<td>886</td>
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<td>Cr</td>
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518 IU/L, GGT 751 IU/L. PT and PTT elevated. CT Abdomen showed cholecystectomy, minimal intrahepatic ductal dilatation in the right hepatic lobe, no common bile duct dilatation. MRI showed no biliary dilatation. The pancreatic duct was unremarkable. Autoimmune workup was negative. Hepatitis panel was negative. The hyponatremia improved with isotonic fluid. Azathioprine was held and N acetyl cysteine was given. An MRI with contrast and MRCP could not be done. Patient liver function improved on day 6 (Table 1). But kidney function deteriorated and patient was planned for dialysis. On day 6 patient had cardiac arrest and passed away.

**Discussion** Siramolpiwat et al. described thiopurine-induced hepatotoxicity to be of three types: hypersensitivity, cholestatic...
reaction, and endothelial cell injury. The patient had an acute ‘cholestatic’ hepatitis in our case.

**Case Report**
A 36-year-old Caucasian female patient with a history of Roux-en-Y gastric bypass 13 years ago, non-alcoholic steatohepatitis (NASH) cirrhosis (128 kg with BMI of 41.7 kg/m²), hypertension, and major depressive disorder was admitted for an uneventful elective orthotopic liver transplant (OLT). Patient was discharged 1 week following OLT on immunosuppression regimen of Prograf 3 mg BID, Mycophenolate mofetil 1 g BID, and Prednisone 10 mg QD. Comprehensive metabolic panel at discharge revealed Alanine transaminase 173 U/L, Alkaline phosphatase 122 U/L, Aspartate transaminase 66 U/L, total bilirubin 3.5 mg/dL, total protein 4.3 g/dL, and albumin 2.7 g/dL. The patient had multiple admissions for failure to thrive and mild liver enzyme abnormalities and hyperbilirubinemia with total bilirubin 3.5 mg/dL. A percutaneous biliary drain was placed for a bile duct stricture. A liver biopsy was performed 10 weeks post-OLT demonstrated an unexpected finding of severe steatosis (>90%) with Zone 3 balloononed hepatocytes and ceroid-laden macrophages without evidence of rejection. Two subsequent biopsies performed at 12 weeks and 16 weeks post-OLT continued to demonstrate >90% steatosis. She was treated for acute rejection based on biopsy at 12 weeks, which resolved on week 16 biopsy.

Six months post-OLT, she was readmitted with coma, acute kidney injury, shock, hyperammonemia with electrolyte abnormalities and unchanged liver enzymes. Infectious work including lumbar puncture was negative with the exception of transient E. coli bacteremia due to stent-associated-cholangitis. The use of only continuous dialysis transiently controlled the hyperammonemia. Suspecting the possibility of severe malnutrition, micronutrients were replaced parenterally and the patient was started on central parenteral nutrition (CPN) Dextrose 22% + 6% lipid emulsion with low initial protein content. She clinically improved and was discharged on CPN and close nutrition follow up. With the gastric bypass history, her early satiety limited her oral intake especially when ill. Liver biopsy at 7 months post-OLT (4 weeks post nutritional repletion) showed a dramatic reduction in the level of steatosis down to 70%.

This is a cautionary tale of severe malnutrition and micronutrient deficiencies after gastric bypass surgery causing failure to thrive leading to coma after OLT. Due to low prevalence, starvation and severe malnutrition are under recognized causes of severe hepatic steatosis. Increasingly, bariatric surgery is being utilized to prevent the progression of non-alcoholic fatty liver disease to NASH. Post gastric bypass nutritional programs do not frequently provide long-term support resulting in a subset of patients developing a catabolic state that could manifest with a hyperammonemic coma. Special attention to nutrition state and caloric intake should be considered in post bariatric surgery patients being listed for liver transplantation.

**Hematology and Oncology**

**Concurrent Session**

**2:00 PM**

**Friday, February 11, 2022**

**#444 THE DELETERIOUS EFFECT OF IRON PILLS**


10.1136/jim-2022-SRMC.448

**Case Report**
Oral iron therapy formulations are broadly used for iron deficiency anemia due to its availability, effectiveness and inexpensiveness. With iron pills administration, gastrointestinal side effects are reported in up to 70 percent of patients. Despite iron pills widespread use and well recognized side effects in clinical practice, iron pill gastritis remains an underdiagnosed condition. We present a 60-year-old male with a medical history of Diabetes mellitus type 2, hypertension and obstructive sleep apnea who presented with iron deficiency anemia and associated weight loss. Due to a strong family history of colonic cancer patient underwent colonoscopy and esophagoduodenoscopy (EGD). Colonoscopy showed normal findings. EGD showed erythema at the body and antrum of the stomach. Biopsy demonstrated gastric mucosa with iron pill fragments deposits, consistent with iron pill gastritis. Irritant free diet and avoidance of non-steroidal anti-inflammatory drugs was recommended. Proton pump inhibitor was prescribed, and iron pills exchanged for an oral liquid iron formulation.

The association between mucosal injury of the upper gastrointestinal tract secondary to diseases that predispose to iron accumulation is well documented, yet the role of iron supplementation in erosive mucosal injury has not been well studied. Intravenous iron has been used as an alternative treatment and is preferable in various settings, but most iron deficient patients worldwide will not have ease of access to this formulation. Additionally, some may wish to avoid the potential risk of adverse reactions such as anaphylaxis. With liquid iron the adverse effect of mucosal erosive injury has not been recorded to our knowledge. In addition, it is a more readily available and inexpensive alternative therapy for those with iron deficiency anemia who have been diagnosed with iron induced gastritis or ulceration. As more than one-quarter of the world’s population is anemic with approximately one-half of this case being secondary to iron deficiency, this makes its management a major public health goal specially in low-income countries. With this case we aim to put into perspective the deleterious effect of iron accumulation on upper gastrointestinal mucosa secondary to the commonly used iron pills in patients with iron deficiency anemia and the potential of liquid iron as an alternative agent.
Purpose of Study Sickle cell disease (SCD) is a chronic disorder with a global distribution that causes high rates of morbidity and mortality. Vaso-occlusive crisis (VOC) are common, which may cause ischemia, necrosis, and reperfusion injury. VOC occur through a partially known cascade, including abnormal interactions between RBCs. P-selectins are a key mediator of adhesion of red sickle cells that are upregulated in SCD. The severity of VOC is associated with the degree of adhesion from red sickle cells. Crizanlizumab is a humanized clonal antibody that blocks cell-cell adhesion by binding P-selectin. It was FDA approved in November 2019 for SCD patients >16 years of age, but some of the physiological effects are still unknown. This project aims to observe laboratory and end organ changes in patients taking crizanlizumab. This retrospective study measured laboratory and physiological data taken before and after at least one dose of crizanlizumab. These parameters include hematological outcomes, kidney, cardiovascular function, and PGIC data.

Methods Used We evaluated 18 patients who received at least 1 dose of crizanlizumab at our Comprehensive Sickle Cell Center. Sickle cell genotype, UPC, hemoglobin, hematocrit, % reticulocyte, LDH, total bilirubin, creatinine, TR maximum velocity (TRmax), RVSP and PGIC were reviewed before and after first and last crizanlizumab administration date. This is an ongoing study, and meaningful data will continue to be collected.

Summary of Results Out of 18 patients, 7 patients have HgbSC, 10 patients HgbSS, and 1 with sickle-beta null thalassemia genotype. The following values were collected before and after last drug administration, respectively: UPC (133.6; 2.3 mg/dL), HgbSS (10 patients HgBSS, and 1 with sickle-beta null thalassemia genotype. The following values were collected before and after last drug administration, respectively: UPC (133.6; 2.3 mg/dL), Pre-TRmax and RVSP on an ongoing study, and meaningful data will continue to be collected.

Conclusions Few patients reported a subjective improvement in their SCD. There was no significant difference before and after last drug administration in all collected parameters, except for UPC and LDH, which were mildly increased; however, the results have major limitations due to small sample size and the short duration of time that patients were on drug prior to collection. We continue to monitor these parameters to assess whether we can arrive at statistically significant results. Crizanlizumab was approved to reduce VOC and hospitalizations. We expect improvement with acute and chronic pain control in SCD patients; however, its effect on laboratory and cardiovascular parameters may not be pronounced. However, because crizanlizumab is a P-selectin inhibitor and reduces VOC, we hypothesize improvement in VOC-related chronic organ damages. Improvement in kidney and cardiovascular parameters such as UPC and TRmax may take months to years. We hypothesize that patients will report subjective improvement through PGIC.

Purpose of Study Irinotecan is a topoisomerase inhibitor that has been widely used in treatment on colorectal, pancreatic, gastric and lung cancer (Pizzolato et al. 2003). Irinotecan undergoes complex metabolism by the liver, has an unpredictable drug toxicity, and in some cases can cause significant side effects including bone marrow suppression (Meyerhardt et al.). Different studies have attempted to identify a predictor of response or toxicity of irinotecan based on genetic variability, or baseline serum bilirubin (Iyer et al. 2002, Meyerhardt et al. 2004). In this study we hypothesized that a total serum bilirubin level > 1.5 mg/dL at the time of initial use of irinotecan would be associated with the average number of irinotecan infusions administered to cancer patients.

Methods Used Patients were grouped in two categories according to their total bilirubin level at the time of their initial treatment (using the closest value to the start of treatment, at most 15 days from start of treatment). Patients in the first group had total bilirubin level of <1.5 mg/dL, and the second group with bilirubin >= 1.5 mg/dL. The average number of administered irinotecan infusions was calculated for each patient. Patient who did not have a baseline bilirubin value were excluded. Average number of infusions per group were calculated and presented as the mean with SD. The number of irinotecan infusions in groups were compared using t-tests assuming unequal variance in Excel to evaluate statistical significance of the obtained data. Multivariate analysis including the variables cancer diagnosis, age at cancer diagnosis, gender, and race was performed in STATA.

Summary of Results 145 patients who received irinotecan chemotherapy were included. This sample consisted of 76 patients with pancreatic cancer, 46 with colon cancer, and 4 patients with lung cancer. 11 patients with an initial serum total bilirubin >1.5 mg/dL received an average of 3.0 +/- 1.4 irinotecan infusions, while 134 patients with total serum bilirubin level of <1.5 mg/dL at initial visit received an average of 4.7 +/- 0.7 irinotecan treatments (P=0.03). On multivariate analysis the relationship was no longer statistically significant (P=0.08). A post-hoc power analysis indicated the sample had 97.7% power to detect a statistically significant difference given the average number of irinotecan infusions per group.

Conclusions While univariate analysis found total bilirubin level at initial treatment to be a statistically significant predictor of average number of irinotecan infusions for cancer patients, on a multivariate analysis this association was no longer statistically significant. Additional methods, including irinotecan dose, greater number of patients with bilirubin >1.5 are needed to optimize use of serum total bilirubin as a predictor of average treatment numbers.
prognosis compared to other subtypes. Few treatments exist for TNBC, partially due to limitations of current preclinical models. Current approaches to drug development in TNBC rely on current 2D and 3D in vitro models which have limited capabilities and unrealistic conditions. Data from these models does not fully capture the complexity of primary or metastatic tumors thus have yielded poor translational results. There remains a critical need to develop relevant model systems that capture the cellular heterogeneity and complex interactions of TNBC’s aggressive nature with the tumor microenvironment.

Patient derived xenografts (PDX), human tumors transplanted and grown in mice, are a recent approach that more accurately captures a TNBC growth model. However, there are barriers when using mouse models: mice stroma can take over the PDX tumors, using immunocompromised mice can prevent immune responses and site-specific interaction, and mice models are timely and costly. To overcome these barriers, a translational microphysiological system (MPS) was developed that is capable of maintaining the primary, human breast microenvironment in vitro. By seeding these MPS with breast cancer cell lines or tumor explants, we produce breast cancer MPS (BC-MPS).

Methods Used The model’s stability was determined by seeding different BC cell lines into the system and determining viability over time. Experimental capabilities of the system were then explored by seeding different BC cell lines into the system and treating with chemotherapeutics, determining if the MPS is capable of pharmaceutical studies. Here, we focus on the TNBC cell lines, MDA-MB-231 and SUM 159, both GFP and luciferase labelled, which were seeded alone and in the BC-MPS, and their response to the chemotherapeutic drugs, Paclitaxel, Romidepsin, and Cobimetinib. The response was monitored by luciferase imaging.

Summary of Results We first demonstrate BC-MPS’ stability ex vivo; the models remain healthy and viable for at least 2 weeks. This allows for long term studies on breast cancer and human breast tissue interactions.

Looking at the experimental capabilities of BC-MPS, once the BC cell lines are exposed to chemotherapeutics, the viability of the cells decrease compared to the control, demonstrating that BC-MPS can be used for drug studies.

Conclusions BC-MPS is a promising new translational MPS that facilitates studying long term interactions between real human breast tissue and cancer cells as well as the native tumor environment in HBT. The BC-MPS system’s ability to support the growth of established cell lines has been demonstrated. Future studies will focus on showing PDX and human tumor viability in BC-MPS, developing the model for personalized medicine.

#448 EXAMINING THE ROLE OF LEPTIN SIGNALING IN A PATIENT-DERIVED MODEL OF TRIPLE NEGATIVE BREAST CANCER

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1Tulane University School of Medicine, New Orleans, LA; 2University of North Texas Health Science Center, Fort Worth, TX

Purpose of Study Individuals with a high body mass index (BMI) have an increased risk of developing many adult cancers, including breast cancer. In triple negative breast cancer (TNBC), a clinically aggressive subtype of breast cancer, increased BMI is associated with more aggressive tumor types and a higher risk of recurrence. The differences in outcomes between obese and non-obese breast cancer patients is a consequence of the complex interplay between social, environmental, and physiological factors that contribute to the etiology of breast cancer. Therefore, understanding the complex signaling events in the obese tumor microenvironment is essential.

Adipose stem cells (ASCs) are a component of the breast microenvironment, and are a subset of mesenchymal stem cells. ASCs from obese patients (obASCs) secrete higher levels of various cytokines and adipokines that induce a more invasive phenotype in triple negative breast cancer cells compared to ASCs from lean individuals. Leptin, an adipokine that is expressed proportionally to fat mass, has been implicated in many cancers. Increased leptin and leptin receptor expression is associated with worse prognosis. This study seeks to examine the role of leptin signalling in triple negative breast cancer.

Methods Used Previous work in conjunction with a collaborating lab has shown that leptin signaling promotes metastasis and increased expression of epithelial-mesenchymal transition (EMT) markers in triple negative breast cancer. This project expands upon this work through using both patient-derived cell lines and and patient-derived xenografts, and examines the role of leptin signalling both in vitro and in vivo.

Summary of Results The addition of conditioned media harvested from obASCs to TNBC cells was able to alter the response of these cells to chemotherapeutic agents. Conditioned media harvested from obASCs was also able to increase the percentage of cells that expressed cancer stem marker proteins. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers. An antagonist of the Leptin receptor was found to reverse this effect and decrease the percentage of cancer stem markers.

Conclusions These molecular differences may contribute to the differences in cancer outcomes between obese and lean individuals with breast cancer, and further study of the crosstalk between obASCs and TNBC is critical.

#449 COVID-19 INFECTIONS IN PEDIATRIC HEMATOLOGY ONCOLOGY PATIENTS IN LOUISIANA

C. Hasan1, Z. LeBlanc2, MC Velez3, D. Leblanc4, R. Gardner1, C. Morrison1, L. Finger1, V. Charbonnet1, P. Prasad1, LSU Health New Orleans, New Orleans, LA; 2Children’s Hospital New Orleans, New Orleans, LA

Purpose of Study The majority of documented SARS-CoV2 infections in children have been mild illnesses. The highest frequency of infection is documented in children between the ages of 5 - 17 years; with the incidence of SARS-CoV2 being the highest in adolescents aged 12-17 years. Severe respiratory complications and a multi-system inflammatory syndrome (MIS-C) have been documented in pediatrics. There is very limited information about pediatric hematology and oncology patients in the United States, actively undergoing therapy, and how SARS-CoV2 affects them. Louisiana was an early ‘hotspot’ for SARS-CoV2 with its first documented infection on March 9, 2020. We present our institutional experience with SARS-CoV2 and pediatric hematologic-oncology patients.
Methods Used A retrospective chart review was performed on all pediatric hematology-oncology patients who were actively being treated at Children’s Hospital of New Orleans between March 9, 2020, through December 15, 2020. Any patient who had a positive SARS-CoV2 test was included in the chart review. Information including demographics, signs, and symptoms at the time of testing, hospitalization, medications, diagnosis, and treatment was obtained. The institutional review board at Louisiana State University Health Sciences Center and Children’s Hospital of New Orleans approved this study.

Summary of Results Between March 9, 2020 and December 15, 2020, 15,404 patients were tested for SARS-CoV2 at Children’s Hospital of New Orleans; 628 children tested positive. Ten of those children had a pediatric hematological or oncological diagnosis. The mean age of the pediatric hematology-oncology patients was 7.9 years, and 80% were female. Ten percent of the patients identified as Hispanic. Forty percent were African American. Of the 10, four children (40%) had a diagnosis of acute lymphoblastic leukemia, and all were actively undergoing chemotherapy. One of the ten total children had undergone a bone marrow transplant. Five (50%) were hospitalized; 2 (20%) with severe infections requiring PICU admission and 3 (30%) patients were treated for MIS-C with SARS-CoV2 specific therapy including Remdesivir, steroids, and Tocilizumab. One of our patients died from SARS-CoV2 related complications.

Conclusions Pediatric hematology-oncology patients are a heterogeneous group of patients, and little was known about how SARS-CoV2 would affect these patients. Of the 15,404 patients tested for SARS-CoV2 at CHNOLA, there were 628 that tested positive between March 9, 2020, and December 15, 2020. 1.6% of those had an oncology or hematology diagnosis. Most of our pediatric hematologic oncology patients did not require hospitalization and did not require treatment. There was one patient who died of SARS-CoV2 related complications.

Summary of Results Thirty-one oncology patients with SARS-CoV2 infection were identified. Median age of 9 years (range 1–20). Fifteen females and 16 males. Diagnoses included were acute leukemia (15), lymphoma (4), CNS tumor (8), and solid tumor (4). Fifty-five percent of patients were asymptomatic and had been tested due to a scheduled hospital admission, procedure requiring sedation, or known exposure to SARS-CoV-2. Forty-eight percent of patients were obese or overweight. Most common symptoms included fever (26%), congestion (19%), and cough (26%). Only 6% of patients complained of loss of taste. No patients complained of loss of smell.

Twenty-nine percent of patients had moderate SARS-CoV-2 disease severity, requiring inpatient management for symptoms without ICU-level care. Three patients developed pneumonia, 2 requiring supplemental oxygen, but none needed ICU-level care. Of the four patients who had completed therapy, one was asymptomatic and the other three had mild disease, requiring symptomatic care at home. One patient had been fully vaccinated against SARS-CoV-2 with a mild infection occurring 2 months after the second vaccine.

Median laboratory values for patients who had SARS-CoV-2 mild/moderate disease compared to asymptomatic patients included hemoglobin 10.4 g/dL and 11.5 g/dL, platelet 183,000 and 198,000, absolute lymphocyte count 820 and 1465, absolute neutrophil count 1145 and 1780, respectively. No statistically significant difference was found.

Conclusions Pediatric oncology patients at our institution had a more benign course with SARS-CoV-2 when compared to national and international reports. Although almost half of our patients were obese or overweight, none had severe disease. Loss of taste and/or smell was uncommon in our patients. As data is rapidly growing, it is important to evaluate risk factors, outcomes, and natural history in this vulnerable population in order to develop management guidelines.
systemic therapy at Ochsner Health between 2015 and 2020. Metastatic prostate cancer diagnosis was confirmed from oncology documentation, pathology, or imaging. Demographics, baseline clinical characteristics, prognostic markers, genetic testing, and type of systemic therapy administered were collected. Chi-squared and Fisher’s exact test were performed to compare differences in genetic testing by age and race.

Summary of Results Of 559 patients with metastatic prostate cancer, 14.1% had genetic testing. 2.0% of patients tested had a BRCA2 mutation, and 8.6% had other mutations including BRCA1 (n=2), ATM (n=7), BRIP1 (n=1), BARD1 (n=1), and RAD51D (n=2). Seven patients (1.3%) were treated with a PARP inhibitor [olaparib (n=4), or rucaparib (n=3)]. For prevalence of genetic testing, there was a statistically significant difference in age between Caucasian (mean 71.0) and African American (mean 67.3) patients. While there was no significant difference in genetic testing and presence of mutations between races, there was a statistically significant difference in genetic testing by age (<70 yrs: 21.5%, >70 yrs: 6.3%), BRCA2 mutation (<70 yrs: 3.1%, >70 yrs: 0.7%), and other mutations (<70 yrs: 12.8%, >70 yrs: 4.1%) of patients tested. Of note 7 patients (1.3%) had microsatellite instability or mismatch repair deficient tumors, with 5 patients receiving immunotherapy.

Conclusions Even though genetic testing in prostate cancer may inform prognosis and treatment options, have implications for family counseling, and is strongly recommended by national guidelines, only a minority of patients underwent testing at our institution. Additional strategies are needed to increase the prevalence of genetic testing in men with advanced prostate cancer, and we need further larger-scale studies to determine differences in predictive markers based on age and race. Developing these strategies and workflows is important to ensure equity with genetic testing for all ages and races. Further analyses will also be useful to determine the cost-benefit analysis of genetic testing, as well as the real-world impact of novel therapies such as PARP inhibitors and immunotherapies on prostate cancer outcomes.

Endoscopic procedures included both ERC and EUS and percutaneous guided biopsy (PCGB) included both CT guided biopsy and ultrasound-guided biopsy. A successful diagnostic yield was defined as a biopsy that lead to a definitive diagnosis for the patient’s cancer. Tumors were subdivided into six groups based on their anatomic location. These groups included intrahepatic cholangiocarcinoma (iCCA), perihilar cholangiocarcinoma (pCCA), distal cholangiocarcinoma (dCCA), pancreatic head, pancreatic uncinate process, and pancreatic body and tail. Stenting efficacy was determined by examining a 50% bilirubin reduction within three weeks of the procedure and a bilirubin reduction to less than 2.5 mg. Adverse outcomes were examined for all procedures. Adverse outcomes included pancreatitis, cholangitis, bleeding requiring transfusion within one week, stent occlusion, and drain occlusion.

Summary of Results 96 patient charts were obtained: 77 cases of pancreatic cancer and 19 cases of cholangiocarcinoma. There were 104 endoscopic procedures and 38 PCGB with the intent to biopsy. When considering all tumor locations, endoscopic procedures yielded a diagnosis 71% of the time and percutaneous procedures successfully yielded a diagnosis in 76% of the cases examined (p-value 0.416). Subgroup analysis of 15 cases of ICCA and pCCA showed endoscopic procedures yielded a diagnosis 50% of the time and percutaneous cases 100% of the time (p-value 0.010). 31 patients received stenting procedures including a total of 38 endoscopic procedures and 6 percutaneous procedures. Bilirubin reduction to less than 2.5 mg occurred in 66.7% of the endoscopic cases and 33% of the percutaneous cases (p-value 0.182) and reduction of bilirubin by 50% occurred in 88.6% of percutaneous cases and 70.4% of endoscopic cases (p-value 1). There was no statistical difference in adverse outcomes among all procedures.

Conclusions Tumor location did not effect the biopsy or stenting efficacy of either percutaneous or endoscopic procedures for pancreatic and cholangiocarcinomas at the single academic institution. Limitations to this study include sample size and examining operators from a single hospital.
decellularized TNBC patient derived xenograft (PDX) models to address this discrepancy. Utilizing our novel decellularization technique, we can investigate the unique ECM composition and cell-matrix interactions in PDX models from understudied patients with diverse clinical presentations. We believe that our models can be used to identify therapeutically targetable matrix proteins that regulate the ECM in TNBC.

**Methods Used** We utilize our novel tissue decellularization method on PDX tumor scaffolds derived from three of our established PDX models (TU-BcX-4IC, TU-BcX-4QX, and TU-BcX-56S). We study cell-matrix interactions (in vitro and in vivo) by seeding a patient cell line that was derived from our TU-BcX-4IC PDX model and an immortalized cell line (MDA-MB-231) onto our scaffolds. Using bioluminescence imaging, we study the effects of Paclitaxel, a microtubule-stabilizing cytotoxic chemotherapeutic, on our seeded scaffolds. We also use qPCR to investigate scaffold regulation of ECM gene composition.

**Summary of Results** Our laboratory has established PDX models that represent the under-represented minority groups that have a propensity for TNBC. Here, we demonstrate that our decellularized PDX tumor scaffold models recapitulate key structural matrix proteins in the TNBC TME and can be used in therapeutic discovery research. Using various techniques, we characterize our models in vitro and in vivo and we investigate drug sensitivity in our models. We examine the complex interactions in the ECM that can be targeted by developing therapeutics.

**Conclusions** Our decellularized scaffold models can be used to investigate ECM onco-architecture and composition and can be used in the discovery of therapeutically targetable ECM pathways. Moreover, these data can aid us in predicting a patient’s individual response to a specific drug, which is vital in personalized medicine. The data presented here will help elucidate the mechanisms underlying the TME’s role in tumorigenesis and recurrence in TNBC.

### Abstracts

**ARE REAL-WORLD PROSTATE CANCER PATIENTS ADEQUATELY REPRESENTED IN RANDOMIZED CONTROLLED TRIALS**

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10.1136/jim-2022-SRMC.458

**Purpose of Study** High proportions of the general population are often excluded in randomized controlled trials, given highly selective inclusion and exclusion criteria. Specifically, when evaluating treatment options for men with metastatic castrate resistant prostate cancer who progressed after first line therapy, cabazitaxel has been approved as a second line treatment option. Many of the research studies used to approve cabazitaxel for this population of patients exclude men with a hemoglobin level less than 10.0 g/dL. The purpose of this study is to show that selective inclusion criteria in randomized controlled trials may select out a target group of patients, which may hinder application in a real-world population.

**Methods Used** Data was pulled from the University of Mississippi Medical Center’s Patient Cohort Explorer. This database consists of de-identified and date shifted information pulled from the electronic medical record system used at the hospital. We performed a retrospective review evaluating hemoglobin levels for men with metastatic castrate resistant prostate cancer treated with cabazitaxel from 2013 to 2021, who had previously failed first line treatment. Data was available for 37 men prior to initiation of therapy and 38 men at the end of therapy. We evaluated hemoglobin levels at the start and end of cabazitaxel therapy and compared these levels to the common hemoglobin cut-off of 10 g/dL used in many trials.

**Summary of Results** From 2013–2021, data was available for 37 men prior to initiation of therapy and 38 men at the end of therapy. The mean and median hemoglobin level at the beginning of therapy was 10.14 g/dL and 10.0 g/dL, respectively, with standard deviation ±1.81 and 95% confidence interval of 0.58. 19 men had hemoglobin levels ≥10 g/dL.

The mean and median hemoglobin level at the end of therapy was 9.67 g/dL and 9.40 g/dL, respectively, with standard deviation ±1.69 and 95% confidence interval of 0.54. 16 men had hemoglobin levels ≥10 g/dL.

**Conclusions** Based on this data, 48.6% of men would have been excluded from receiving cabazitaxel based on randomized controlled trial samples. Additionally, 57.9% of men would likely not have been included in future studies or have been considered for clinical trials based on hemoglobin levels after progression on cabazitaxel therapy. Given that men with metastatic castrate resistant prostate cancer are often older with more comorbidities, including anemia, if the hemoglobin threshold for randomized controlled trials were lowered to 9 g/dL, this would increase the amount of men included at the beginning and end of therapy by 21.62% and 18.42% respectively. This would create a more accurate representation of a true patient population and provide more appropriate evidence on which to base treatment decisions.

**Infectious diseases I**

**Concurrent session**

2:00 PM

**Friday, February 11, 2022**

### Abstracts

**KSHV INFLAMMATORY CYTOKINE SYNDROME (KICS)**

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**Case Report** A 33 year old man with newly diagnosed HIV (CD4 332 cells/mm3), recent renal failure, thrombocytopenia, ocular syphilis, and Kaposi sarcoma presented with progressive dyspnea, productive cough, and pleuritic chest pain. On initial evaluation, the patient was tachypneic, tachycardic, and hypotensive. He had coarse crackles with poor air movement. Violaceous oral lesions were noted on the hard palate along with cervical and axillary lymphadenopathy. Several violaceous lesions covered the patient’s arms. He was admitted to the MICU for continuous BiPAP but he quickly decompensated and was intubated a few hours later. The next day, his abdomen became distended in the setting of poor urine output. Bedside ultrasound...
showed abdominal fluid and a right pleural effusion. A chest tube was placed that drained serosanguinous fluid. He became hypotensive and did not improve with pressors. The etiology of patient’s condition was thought to be from inflammatory cytokine syndrome secondary to kaposi sarcoma, but the patient was too unstable to tolerate chemotherapy with doxorubicin and rituximab. He remained anuric and CRRT was initiated and then discontinued on day 4 as the patient was persistently hypotensive despite maximal therapy. With the patient’s progressing multiorgan failure, his family chose to pursue comfort care. A cytokine panel, that had been sent out to an outside lab, demonstrated elevated IL-2, IL-2R, interferon gamma, IL-10, IL-13, and IL-6, which supports KSHV Inflammatory Cytokine Syndrome (KICS) as the etiology of the patient’s presentation. Although, KICS was suspected early, the disease process progressed too quickly for treatment to have been initiated.

Discussion KICS is a newly-described complication of Kaposi sarcoma-associated herpesvirus (KSHV) infections that is poorly described due to its high mortality rate. Most available data on KICS is derived from case reports. This syndrome typically presents in patients with a low CD4 count even if the patient is being treated with ART. Clinical presentation often resembles sepsis, but these patients will not respond to antibiotic therapy. Mortality rate is 60% with better outcomes in cases with early diagnosis and chemotherapy.

Purpose of Study Vaccine hesitancy is a complex and controversial issue that underlines current efforts at ending the COVID-19 pandemic. Vaccine hesitancy in healthcare workers further complicates issues as healthcare workers interact, educate and influence their peers and community members at large. We sought to understand vaccine hesitancy among HCW in four large healthcare systems in the metro-Atlanta region.

Methods Used We conducted a cross-sectional multicenter 12 question anonymous survey sent via email to HCWs in four healthcare systems in metropolitan Atlanta over a seven week period from May to June 2021 using Qualtrics XM. We defined vaccine hesitancy as those who had not received the vaccine or planned to get it later. Demographics, employment information, history of COVID-19 diagnosis, vaccination status, and reasons for vaccine hesitancy were assessed. Descriptive variables including HCW demographics, clinical role, and self/family member with previous diagnosis of COVID were compared using chi-square and t-tests. A multivariate logistic regression model controlled for age, sex, race, ethnicity, and education was used to estimate adjusted measures of association analyzed with SAS 9.4. COVID vaccine perceptions were further explored using a five point Likert scale.

Summary of Results Of the 5,329 completed responses from HCW, the largest group of respondents comprised of nurses (35%), followed by physicians (18%). Of the 551 (10%) vaccine hesitant HCW, 43% of them were black and 39% were white. 16% of the vaccine hesitant identified as working in the Emergency Department and 14% in the Intensive Care Unit. In the multivariate analysis, HCW aged 18–35 were more likely to be vaccine hesitant than older age groups with vaccine hesitancy decreasing as age increased. Non-Hispanics were more likely to be vaccine hesitant than Hispanics. Those with education levels of less than a Bachelor’s degree were more likely to be vaccine hesitant than those with bachelor’s degree or higher. There were no differences observed between the black and white races for vaccine hesitancy. Having a family member with COVID or caring for COVID patients did not have a significant impact on vaccine hesitancy. The main reasons for vaccine hesitancy were fear of side effects followed by concerns about safety and inadequate research.

Conclusions Ten percent of HCW in the four health systems studied were found to be vaccine hesitant. Increased vaccine hesitancy was associated with the younger age group of 18–35, Non-Hispanic ethnicity, and education less than a bachelor’s degree. The main reasons for vaccine hesitancy were fear of side effects followed by safety and inadequate research concerns. As vaccine mandates begin, the threat of workforce losses is imminent creating a strain on healthcare systems. Booster/third dose vaccine hesitancy also remains a significant concern. It is critical to identify and develop strategic interventions to reduce vaccine hesitancy among HCW.
activation of transcription factors NF-kB and IRF were diminished by TiO2.

Conclusions Our findings show that exposure of human macrophages to TiO2 enhances granuloma formation upon M. tuberculosis infection in an in vitro granuloma system. This study demonstrates the effect of TiO2 in activation of human macrophages against an intracellular pathogen, and may prompt future therapeutic strategies for TB.

#458 A SEVERE CASE OF SYPHILIS MASQUERADING AS LYMPHOMA

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10.1136/jim-2022-SRMC.462

Case Report A 34-year-old man presented as a new referral to Lymphoma clinic for management of cutaneous T-cell lymphoma (CTCL). He had progressive, disfiguring and painfully burning lesions on his bilateral hands and feet for over two years. The lesions are a combination of ulcerations as well as skin thickening and crust. He had seen several physicians including a primary care physician, a dermatologist, and a podiatrist over the past few months, however he had no response to various topical treatments. A skin biopsy was done which was suggestive for CTCL. His other past medical history includes progressive left greater than right vision worsening and eye pains as well as a hospitalization 9 months prior at an outside facility for stroke versus Bell’s palsy of unclear etiology with chronic R facial deficits.

A repeat workup was done to confirm his outside diagnosis. Neither the repeat biopsy nor flow cytometry were consistent for CTCL, with polyclonal T-cell populations observed. The skin biopsy had findings that were suggestive for syphilis. Additional immunostaining was done which demonstrated spirochetes. He was referred to our clinic for additional evaluation. He has no history of international travel but did have a history of unprotected sex with male and female partners. Additional testing was done which confirmed syphilis with an RPR titer of 1:1024 as well as positivity for HIV-1 and a CD4 of 174/12%. He was subsequently hospitalized and was found to have uveitis on ophthalmologic evaluation. Lumbar puncture showed a lymphocytic pleocytosis and a positive VDRL test. He was diagnosed with cutaneous tertiary syphilis, neurosyphilis, and ocular syphilis with HIV co-infection and was started on aqueous Penicillin G therapy. His skin lesions have begun to heal, and his vision improve on therapy. He was started on antiretroviral therapy for his HIV after completing treatment for his syphilis.

Syphilis is an ancient disease with a history that extends back to antiquity, however it continues to have significance in the modern day. The 2019 CDC surveillance report showed that reported STDs in the USA had reached an all-time high for the 6th consecutive year. In particular, the rates of Syphilis were up 74% compared to rates from 2015. The incidence of new HIV infections is declining throughout the United States except in the South. With the prevalence of Syphilis and HIV in our region increasing, so too should our vigilance in screening patients and clinical recognition of signs and symptoms. Here we present a case of a delayed diagnosis of syphilis and HIV with subsequent advanced tertiary syphilis with cutaneous, ophthalmologic, and neurovascular complications. He had several risk factors for acquiring his sexually transmitted infections that were unrecognized. This case serves as a reminder that these devastating sequelae of unrecognized STIs can be mitigated through preventative education, early detection and treatment.

#459 INVESTIGATION OF PATIENT AND VIRAL CHARACTERISTICS ASSOCIATED WITH SARS-COV-2 VACCINE BREAKTHROUGH INFECTIONS IN ATLANTA, GA

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10.1136/jim-2022-SRMC.463

Purpose of Study Despite the tremendous success of SARS-CoV-2 vaccines, breakthrough infections occur and are being recognized with increasing frequency. It is unclear whether breakthrough infections are the result of host and/or viral factors. We examined clinical and viral genomic data from patients with SARS-CoV-2 infection after vaccination to elucidate factors contributing to breakthrough.

Methods Used This study was conducted in the Emory Healthcare (EHC) System. Patients with vaccine breakthrough infection, defined as a positive PCR test ≥14 days after the final dose of an FDA approved vaccine, were identified by both routine surveillance and notification by treating clinicians. Vaccination status was obtained from the Georgia Registry of Immunization Transactions and Services records by the Georgia Emerging Infections Program.

Clinical information was derived from electronic medical records and was compared to data from 2–3 matched controls per case. Residual SARS-CoV-2 positive nasopharyngeal (NP) samples were collected and underwent RNA extraction. SARS-CoV-2 genome sequencing was performed using random-primed cDNA synthesis, Nextera XT library preparation, and Illumina sequencing.

Summary of Results Forty vaccine breakthrough cases were identified between March 22 and July 16, 2021. The median time from final vaccine dose to positive COVID-19 test was 91 days (range 15–163). Compared to 94 controls, vaccine breakthrough cases were significantly older (median 57.5 years vs 42.0 years, p<.0001). Individuals over 60 accounted for half of all breakthrough cases, and individuals over 40 accounted for 80%. Immunosuppressed individuals represented 37.5% of breakthrough cases compared to 25% of unvaccinated controls. Rates of symptomatic infection and severe disease leading to hospitalization were similar between cases and controls. There was no difference in SARS-CoV-2 RT-PCR cycle threshold (Ct) between cases (n=32, median Ct=20.7, interquartile range (IQR)=10.3) and controls (n=94, median Ct=24.0, IQR=7.0; p=0.34).

SARS-CoV-2 genome sequences from 24 cases were compared to 116 baseline surveillance sequences from unvaccinated EHC patients. There was no distinct phylogenetic clustering of vaccine breakthrough cases, and their sequences belonged to the predominant lineage of the time. From March 22-June 19, B.1.1.7 (alpha) accounted for 78% of breakthrough infections and 77% of surveillance sequences. From June 20-July 16, B.1.617.2 (delta) accounted for 86% of breakthrough infections and 72% of surveillance sequences.
No spike mutations or deletions were associated with vaccine breakthrough infections.

Conclusions Overall, our findings suggest that host factors, such as older age and immunosuppression, play a more important role than viral factors in SARS-CoV-2 vaccine breakthrough infections. Further studies are needed to understand the potential impacts of waning immunity or poor immunogenicity in individuals who experience vaccine breakthrough infections.

#460 ASSESSING AND IMPROVING ADHERENCE TO VACCINATION RECOMMENDATIONS FOR CHILDREN WITH HIV INFECTION

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Purpose of Study Centers for Disease Control and Prevention (CDC) recommendations for immunization of children with HIV infection vary from the recommendations for the general population. For example, the pneumococcal polysaccharide (PPSV23) and meningococcal ACWY (MenACWY) vaccines are indicated at an earlier age, the human papillomavirus (HPV) vaccine requires an extra dose, and there are specific catch-up immunization recommendations for Haemophilus influenzae type b and pneumococcal conjugate vaccines. Data on adherence to these recommendations in primary and specialty care settings is scant. The primary objective of this quality improvement (QI) project was to assess and improve immunization rates for these vaccines in children with HIV infection receiving care from the OU Pediatric Infectious Disease Clinic in Tulsa. The secondary objective was to assess and improve immunization rates for all age-appropriate vaccines in this group.

Methods Used In this QI cycle, we reviewed vaccination records and offered the CDC recommended vaccines during each patient’s quarterly follow-up visits in the HIV specialty clinic. We utilized the Oklahoma State Immunization Information System (OSIIS) as the primary source for evaluating immunization records. When inadequate, we utilized additional immunization records supplied by the patient. We provided the incomplete immunizations, offered counseling in cases of vaccine hesitancy, and updated OSIIS after vaccine doses.

Summary of Results Baseline review of immunization records from our cohort (n=13, ages 6–14) revealed that 46% (n=6) had not received any doses of PPSV23 or MenACWY, 23% (n=3) were incompletely immunized with one or both vaccines, and 31% (n=4) were fully immunized with only one of the vaccines. No patients were fully immunized with both vaccines. Additionally, none of the patients had completed a 3-dose series of the HPV vaccine. Immunizations with vaccines recommended for the general pediatric population were up-to-date in 69% (n=9), missing or incomplete for ≤3 vaccines in 23% (n=3), and missing or incomplete >3 vaccines in 8% (n=1). Among the cohort, a total of 43 missing/incomplete vaccine series were identified at baseline. Since implementation, all 43 vaccine series have been completed.

Conclusions Higher immunization rates for the generally recommended vaccines compared to the vaccines recommended for patients with HIV infection could suggest a lack of knowledge among providers regarding immunization recommendations for these patients. Assessing the immunization rates of children with HIV infection at other institutions or children with other special vaccine needs at our institution can provide invaluable information and improve care.

#461 TREATMENT OF TRICHOMONAS VAGINALIS INFECTION IN WOMEN IN THE SETTING OF 5-NITROIMIDAZOLE DRUG RESISTANCE

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Purpose of Study Trichomonas vaginalis is the most common non-viral sexually transmitted infection (STI) worldwide. T. vaginalis has been associated with adverse pregnancy outcomes, infertility, and increased risk of acquisition and transmission of HIV. Few safe and effective treatment options are available for this STI outside of the 5-nitroimidazole drug class. Unfortunately, prior studies have estimated 5-nitroimidazole drug resistance prevalence in T. vaginalis to be 5–10%. Anecdotally, the number of drug resistant T. vaginalis cases are rising in women. Optimal treatment regimes for such cases is currently unknown.

Methods Used We conducted a literature review of case reports/series and observational studies describing reported clinical treatment regimes for 5-nitroimidazole-resistant T. vaginalis in women. We searched PubMed without time limitations for English language articles describing the clinical management of 5-nitroimidazole-resistant T. vaginalis infections using the search terms ‘trichomoniasis AND metronidazole AND resistance,’ ‘trichomoniasis AND 5-nitroimidazole AND resistance,’ ‘trichomoniasis AND secnidazole AND resistance,’ and ‘trichomoniasis AND tinidazole AND resistance.’ Inclusion criteria were laboratory diagnosed T. vaginalis with drug susceptibility testing results, details of treatment regimen(s) used, and post-treatment follow-up data. Abstracts were reviewed and if eligibility criteria were met, they were included in this review.

Summary of Results We identified 388 articles, 15 of which met eligibility criteria. Of these, 6 were observational studies and 9 were case studies. All studies diagnosed T. vaginalis using wet mount and/or culture. Among observational studies, the populations of women enrolled were heterogeneous (i.e., from a variety of clinical sites and locations); 5-nitroimidazole resistance to MTZ and/or TDZ was found in 260/679 (38.3%) of women across all observational studies. Of the 260 women with 5-nitroimidazole resistance, 48.1% had high level resistance to MTZ and/or TDZ. The 9 case studies consisted of 13 women with persistent T. vaginalis infection. Of women with persistence, 11/13 (84.6%) had 5-nitroimidazole resistance. Of the 11 women with persistence and resistance, 45.5% had high level resistance to MTZ or TDZ and 4/11 (36.4%) had high level resistance to both MTZ and TDZ. No studies included resistance testing for SEC. Effective alternatives in some cases consisted of higher doses of oral 5-nitroimidazoles (e.g., 1 g oral TDZ three times daily for 14 days) and/or intravaginal therapies (i.e., paromomycin cream 5 g (250 mg/g) daily, furazolidone 92.6 mg/5 g twice daily) for 7–14 days.
Conclusions Currently, the medical literature suggests meaningful rates of 5-nitrotimidazole resistant T. vaginalis isolates. While there are several regimens outside of this class that have reported efficacy, further investigation is needed into what the optimal treatment regimen is for such infections.

#462 IL-10 DEPENDENT SECRETED PRODUCTS PROTECT AGAINST NEURON DEATH IN CNS INFECTIONS

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10.1136/jim-2022-SRM.C466

Purpose of Study Infants being treated for hydrocephalus are at high risk of S. epidermidis ventriculoperitoneal shunt infection. Our mouse model of infant central nervous system (CNS) catheter infection has shown an increase in the parenchymal spread of infection in infant mice, with a paradoxical decrease in inflammatory response compared with adult mice. This may serve as a protective mechanism for the developing brain. Our preliminary data in in vivo models show an increase in abnormal neurologic behavior such as poor nest building and increased seizure activity in the IL-10 knock out mice compared with wild-type mice, suggesting a protective role for IL-10. This study was designed to evaluate the role of IL-10 in neuron death following CNS biofilm infection.

Methods Used We co-cultured 6-day old S. epidermidis biofilms with wild-type or IL-10 KO primary microglia for 6 hours creating a biofilm conditioned media (WT-BCM; IL10-BCM). Additional exposure groups include S. epidermidis biofilm conditioned media, IL-10 microglia conditioned media, wild-type microglia conditioned media, neuron conditioned media, and control media. The media was added to wild-type primary neurons for 48 hours to measure neuron death via LDH release and MTT assay. Multiplex analysis and mass spectrometry for seeking novel protein markers and interactions within the WT or IL10KO groups when compared to control. Inflammatory mediators were also consistent with greater neuron death after exposure to IL10-BCM than either the WT-BCM or BCM alone suggesting a protective role for IL-10. This study was designed to evaluate the role of IL-10 in neuron death following CNS biofilm infection.

Summary of Results IL-10 biofilm conditioned media resulted in a 36% higher LDH release than IL10-MGCM and 32% higher than either WT-MGCM or WT-BCM. MTT results were also consistent with greater neuron death after exposure to IL10-BCM than either the WT-BCM or BCM alone groups when compared to control. Inflammatory mediators were increased in the IL10-BCM, which may contribute to the increased neuron death observed. Additional MTT data within the IL10-MGCM shows a presence of mediators (IL-4, IL-12p40, & IL-12p70) that correlate to the role of microglia being targeted toward an anti-inflammatory M2 phenotype once activated by Staphylococcus epidermidis biofilm, which may contribute to biofilm persistence. The treatment samples were assessed using mass spectrometry for novel protein markers and interactions within the WT or IL10KO experimental groups, given the lack of a clear phenotype using targeted chemokine and cytokine analyses. There was a single protein marker within the WT group not present in the IL10 group, which is Apolipoprotein A-1 (ApoA1).

Conclusions Neuron death is increased after exposure to IL10 KO microglia/biofilm co-culture conditioned media. Because this is mediated via conditioned media, this suggests that the interaction between microglia and S. epidermidis biofilm produces a soluble factor that increases neuron death. A better understanding of these soluble protective factors can be used to guide future screening and adjunctive therapies.

#463 SIMULTANEOUS BARTONELLOSIS AND TOXOCARIASIS IN AN IMMUNOCOMPETENT PEDIATRIC PATIENT

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10.1136/jim-2022-SRM.C467

Case Report Toxocariasis and Bartonellosis are uncommon infections caused by roundworm parasites, Toxocara species, and intracellular gram-negative bacillus, Bartonella henselae. T. cati is associated with feline feces1 and B. henselae with cat scratches or bites. Typically, these infections are self-limited, but can have severe manifestations in immunocompromised patients3, 5.

Case Description A 5-year-old male with a history of asthma and allergic rhinitis presented to the general pediatric clinic with a one month history of increasing left-sided painful cervical lymphadenopathy with fatigue, diarrhea, night sweats, decreased appetite and bone pain. A week prior, the patient presented to the ED for increased swelling of the area, concerning for an abscess. Physical exam showed mobile, tender, left posterior cervical lymphadenopathy without overlying erythema. Workup including CBC, CMP, CRP, and ESR were all grossly unremarkable aside from an elevated absolute eosinophil count of 1600 cells/µl. Ultrasound of the neck showed findings consistent with prominent lymph nodes. He was diagnosed with lymphadenitis, prescribed amoxicillin and discharged home. At outpatient follow-up, the mother reported continued swelling. Due to lack of clinical improvement on amoxicillin, the patient was transitioned to amoxicillin-clavulanate and referred to ENT for biopsy. Lymph node excision was completed and pathology noted to be benign with reactive follicles and loose granulomatous infiltration. Special stains were negative for fungal and acid-fast organisms. Due to concerns for other infectious processes such as toxoplasmosis, the patient was referred to Pediatric Infectious Diseases. Upon initial consultation, the patient presented with new, right-sided cervical lymphadenopathy and fatigue. On further questioning, it was revealed that the family owned three cats who often scratched the patient. Of note, one female cat recently had a litter of kittens that all died of unknown cause. Further laboratory work up resulted in an isolated eosinophilia of 1386 cells/µl, and an elevated IgE of 1964 kU/L. Initial toxocara IgM was negative, but repeat testing was positive. Bartonella IgM was negative, but IgG was positive at a 1.64 ratio. The patient was treated with azithromycin and rifampin for 5 and 14 days respectively for Bartonella as well as albendazole for 5 days for concurrent Toxocariasis with improvement of symptoms.

Discussion This case illustrates the range and significance of symptoms secondary to zoonotic diseases in an otherwise healthy child. Enlarged lymph nodes with systemic symptoms in pediatric patients require thorough work-up, including evaluation of animal exposures, and a broad differential.
Concurrent session
2:00 PM
Friday, February 11, 2022

**Abstracts**

**Neurology and neurobiology**

**#464**

**NEUROINFLAMMATION DISRUPTS THE DEVELOPMENT OF NEURONS AND OLIGODENDROCYTES IN THE PREMATURAL BRAIN LEADING TO NEUROBEHAVIORAL IMPAIRMENTS IN RATS**

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Purpose of Study Thanks to advances in neonatal care, the survival rate for very premature infants (24–32 weeks) has improved over the last two decades. As a result, the nature of brain injury associated with preterm birth has been evolving from predominantly necrotic, focal periventricular leukomalacia (PVL) to diffuse white matter injury (dWMI). In contrast to PVL that primarily injures oligodendrocyte (OL) progenitor cells (OPC) in the white matter, dWMI is characterized by disturbances in the development of OLs and neurons in addition to axonal injury involving both the white and grey matter structures. Perinatal infection/inflammation is established as the most important contributing factor for dWMI, yet the underlying mechanisms of dWMI induced by inflammation remain poorly understood. This study tests the hypothesis that neuroinflammation in the premature brain disrupts both neuron and OL development as well as axonal injury, resulting in neurobehavioral deficits in late development.

Methods Used Neuroinflammation was induced by intracerebral micro-injection of lipopolysaccharide (LPS) to postnatal day 5 (P5) rat pups. Control rats were injected with saline. A battery of neurobehavioral tests were performed to assess neurodevelopment on P6 and P20. Inflammatory response, axonal injury, and developmental states of OLs and neurons were assessed on P7 and P21 by Western blot and immunohistochemistry. Cells with positive immunostaining were counted by stereology, while neuronal dendrites were quantified by ImageJ software. 42 male and 49 female pups were used in this study.

Summary of Results Intracerebral delivery of LPS led to a robust activation of microglia and astrocytes 48 hours after the insult, indicated by an increase in the density of Iba1+ cells (p<0.001) and the upregulation of astrocyte marker GFAP (p<0.01). Neuroinflammation led to acute axonal damage, as demonstrated by beaded ß-App+/Neurofilament+ axons in both the white and grey matter. Neuroinflammation caused a significant reduction of Rip+ immature OLs but not PDGF+ OPCs on P7 (P<0.001), indicating arrest in OL differentiation. Expression of immature neuron marker Doublecortin (DCX) in the hippocampus and density of MAP2+ dendrites in the cortex (p<0.01) were significantly reduced in LPS-treated rats as compared to the controls. Behavioral tests show sex-specific developmental disturbances in sensorimotor and cognitive functions in LPS-exposed rats, demonstrated by impairments in righting reflex, wire hanging, hind limb suspension, and negative geotaxis tests at P6, and Y-maze, vibrissa-elicited forelimb-placing, and initial step tests at P20.

Conclusions Our study demonstrates that neuroinflammation initiated at an immature stage disrupts both OL and neuron development and causes acute axonal injury, leading to deficits in neurological functions. Our findings closely reflect cardinal neuropathological features of dWMI of very preterm infants, suggesting that the current animal model holds a great potential in translational research.

**#465**

**THE EFFECT OF METHOTREXATE TREATMENT ON NEUROINFLAMMATION GENE EXPRESSION IN PEDIATRIC CANCER PATIENTS**

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Purpose of Study Methotrexate treatment in pediatric patients has been associated with the long-lasting development of detrimental neurological and psychosocial sequela following cancer survival. These deficits which persist after the methotrexate exposure (late effects) may include abnormal behavior such as unusual aggression, problems with executive functioning and processing speed as well as mental disorders like ADHD, depression, and anxiety. We are conducting retrospective neurocognitive and psychosocial analysis of living cancer survivors who have completed methotrexate treatment and conduct genetic analysis of white matter tissue samples obtained from autopsies of deceased patients who have previously undergone chemotherapy. The goal of our project is to reveal candidate risk genes and pathways contributing to neurocognitive and psychiatric late effects.

Methods Used This study has been approved by both the Institutional Review Board (IRB). Retrospective study of cancer survivors: Medical records of cancer survivors of ages 2–22 enrolled at the Late Effects Clinic at Children’s Hospital New Orleans (CHNOLA) are being reviewed. Specifically, we are examining neurological, audiological, and psychosocial testing (Behavioral Assessment System for Children, Third Edition, BASC-3) results before and after treatment. Genetic analysis of deceased patients: RNA was extracted from formalin-fixed, paraffin embedded (FFPE) brain specimens from autopsies of patients who received methotrexate treatment and normal controls for the genetic analysis. Nanostring, a variation of targeted RNA microarray testing, is being used to detect abnormal up or downregulation of neuroinflammation-associated genes. Bioinformatics using Ingenuity Pathway Analysis (IPA) is being used to determine affected biological pathways and networks.

Summary of Results Chart reviews demonstrated that patients who are at risk of experiencing neurocognitive deficits are those who received methotrexate through high-dose IV or intrathecal and those who received cranial irradiation. Those who were at the highest risk were those who received intrathecal methotrexate, those of the female sex, patients who were of a younger age at diagnosis, and those who received cranial irradiation. Genetic testing of white matter autopsy samples, revealed six genes that were three to eight-fold over or under expressed: GJA1 (non-syndromic hearing loss), HSPB1 (Charcot-Marie-Tooth disease), AGT (angiotensin), OLFM1 (microglia suppression), P2RY12+ (clotting), and CD24 (myelin sheath).
Conclusions This project will create a better understanding of the genotype-phenotype interactions in cancer survivors who are affected by chemotherapy-induced neurological and psychosocial late effects. The present study will better provide these patients and their families with access to precision medical interventions, educational materials, and social support to increase their health-related quality of life.

Purpose of Study Brain death can be defined as the irreversible absence of brain function with a known etiology. The purpose of this study is to evaluate various patterns of brain flow in children of various ages, fulfilling clinical brain death diagnostic criteria. The gold standard ancillary test for brain death diagnosis is nuclear brain scan. Transcranial Doppler (TCD) is an alternative technique assessing brain perfusion.

Methods Used TCD was performed in 40 pediatric patients fulfilling brain death criteria. All patients were normothermic and normotensive. To fulfill TCD diagnostic criteria of loss of brain perfusion, time average mean flow velocity had to be less or equal to zero for thirty minutes. In all patients, systolic blood flow was brisk and short. The diastolic blood flow patterns were divided into 4 grades: Grade 1: inverted diastolic flow; Grade 2: disappearance of the inverted diastolic flow at the end of diastole; Grade 3: oscillating pattern in early diastole; and Grade 4: no diastolic flow with systolic blip. The absence of flow in venous sinuses was examined when feasible. In our analysis, we correlated flow patterns with the age of the patient.

Summary of Results We observed grade 1 flow pattern in 5 patients, grade 2 in 3 patients, grade 3 in 23 patients, and grade 4 in 5 patients. No venous flow was seen in 6 infants out of which 3 had a grade 1 flow pattern. The patients who had the predominant flow pattern (Grade 3) range between 5 days and 17 years of age, with a median age of 2 years.

Conclusions Diagnosis of brain death was validated using a nuclear brain scan in 3 patients. One had a grade 1 flow pattern while the other 2 had a grade 4 flow pattern. There was no significant association between age and flow pattern. The absence of flow in deep venous sinuses seen on Power Doppler imaging is only appreciated in infants as it requires adequate acoustic windows.

Purpose of Study Occipital Neuralgia (ON) is described as bilateral or unilateral shooting pain in the posterior aspect of the scalp, often accompanied by tenderness over the occipital nerve distribution or loss of sensation in the affected area. Different proposed mechanisms of ON include nerve root damage, post-surgical damage, irritation, and compression by the occipital artery. Our prior literature review demonstrated a gap in the current literature on the use of ultrasound to visualize and measure the dimensions of occipital nerves in the setting of ON. The purpose of our study was to use ultrasound guided imaging to test our hypotheses: 1) Occipital nerve size is more prominent in patients with ON. 2) Occipital nerve size correlates to subjective pain severity in the setting of ON.

Methods Used We conducted a quantitative analysis comparing ultrasound-guided measurements of the occipital nerve between 9 patients diagnosed with ON and 13 asymptomatic controls.

Summary of Results An Independent Samples t-test showed a significant difference between cross-sectional areas of greater and lesser occipital nerves. (p-value 0.003, 0.04). Most of our patient group had severe pain with no significant difference in their pain score.

Conclusions Our research provides evidence for increased occipital nerve size in patients suffering from ON and emphasizes the role of ultrasound as an essential diagnostic and surveillance tool for this chronic neurologic condition. We were unable to evaluate the correlation between occipital nerve size and subjective pain scale. Future studies utilizing expanded data of patients with mild and intermediate pain scale scores could evaluate for correlation.

Case Report Silicone oils are commonly used as an endotamponade agent for the treatment of complicated retinal detachments. However, a rare complication that can occur is the migration of silicone oil out of the eye. The purpose of this case report is to add more information to the literature and to report a rare incident in which a patient with a history of ocular silicone oil endotamponade presented with an intraocular silicone migration via the optic nerve to the lateral ventricles several days after a myocardial infarction.

Methods Used Not applicable.

Case Report A 61-year-old female with a history of left eye ocular silicone oil endotamponade due to tractional-rhegmatogenous retinal detachment secondary to proliferative diabetic retinopathy initially presented to the emergency department
for a non-ST elevation myocardial infarction. The patient has an extensive medical history, some of which includes end-stage renal disease, HTN, coronary artery disease, OS neovascular glaucoma, OD proliferative diabetic retinopathy. Upon discharge the patient was found to be drowsy and difficult to arouse. A visual acuity exam showed NLP, 20/400 OD and pinhole to 20/80. Intraocular pressure was 17 OD and 50 OS. Lab works of AGB with electrolytes, lactate and glucose were unremarkable. A brain CT was performed and was concerning for optic nerve meningioma or an intra-optic hemorrhage. A hyperdense lesion was found in the frontal horn of the left ventricle which was concerning for a subependymal bleed or neoplasm. The patient’s mental condition reflected psychosis. Neurology and neurosurgery were consulted and recommended an MRI without contrast. The MRI showed a few small acute punctate embolic infarcts without significant mass effect, diffuse cerebral and cerebellar volume loss. Additionally, it showed a contiguous silicone oil migration from the vitreous cavity to the optic tract and frontal horn of the left lateral ventricle.

Conclusion As silicone oil is a common endotamponade agent, it is important for clinicians to be aware of this rare complication of ocular silicone oil endotamponade when considering lengthy and costly work-ups, as well as possible pathophysiologies.

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**Abstracts**

**#469 ASEPTIC MENINGITIS WITH ACUTE TRANSVERSE MYELITIS AS AN INITIAL MANIFESTATION OF PEDIATRIC NEUROMYELITIS OPTICA**

PR Cabrera*, P Maertens, University of South Alabama, Mobile, AL

10.1136/jim-2022-SRMC.473

**Case Report** Aquaporin-4(AQP4) antibody is highly specific for neuromyelitis optica spectrum disorders (NMOSD). Viral illness, immunization, and other autoimmune diseases can lead to NMOSD flares. CSF leukocytosis mimicking bacterial infection as the trigger or presenting symptom of NMOSD has rarely been reported in the literature. In this study, we report a pediatric case of fulminant NMOSD with aseptic meningitis and transverse myelitis as initial manifestations.

**Case presentation** Patient is a 17-year-old female with no significant past medical history who woke up with acute paraplegia and sensory loss below the chest. The night before, she had fever and severe headache with vomiting. Three days prior to presentation, she missed school due to abdominal pain and nausea. On examination, she had lower extremities flaccid palsy, areflexia, loss of abdominal cutaneous reflexes, and lack of sensation below T4. She complained of pain between the shoulder blades.

Brain MRI showed a Boomerang sign in the splenium of the corpus callosum. There was no meningeal enhancement. Spinal MRI showed a poorly delineated hyperintense T2 STIR signal without restricted diffusion across the spinal cord from C5-T11 without significant enhancement. Lumbar puncture brought a slow flowing cloudy CSF with pleocytosis (5042/mm³ {polynuclear 4501/mm³; monocytes 541/mm³}), elevated RBC (2000/mm³), elevated proteins (222 mg/dL) and hypoglycorrhachia (24 mg/dL). CSF myelin basic protein was elevated (127 ng/dL). CSF IgG synthesis was elevated (166 mg/day). She was treated with ceftriaxone and vancomycin initially due to concern for meningitis while receiving 10 mg/kg/day of methylprednisolone. There was no improvement in symptoms. Ophthalmologic evaluation was reassuring. The extensive work-up was negative for fungal, bacterial, viral and parasitic infections. Five days after presentation, repeat lumbar puncture showed clear CSF with improved pleocytosis (49/mm³ with 20% monocytes), normal CSF glucose, and improved CSF proteins (91 mg/dL). Steroids were slowly weaned. Serum testing for AQP4 ab (>80 U/ml; Normal <3) confirmed diagnosis of NMOSD. Patient was started on weekly rituximab without gross improvement in neurological symptoms prior to discharge. Follow-up MRI one month after presentation, showed an arachnoid web at the level of T11 and T8 due to intrathecal adhesions related to the prior meningitis and signal heterogeneity of the thoracic cord.

**Conclusion** Aseptic meningitis may be an initial presentation of AQP4 ab positive NMOSD in the pediatric population. Treatment is geared towards immunosuppression with steroids and decreasing recurrence risk with azathioprine, mycophenolate mofetil, or rituximab, although in our case such treatment was of no benefit.

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**#470 A DIFFERENT STROKE FOR PEDIATRIC FOLK**

C Montcalm*, A Kulkarni, S Blakemore. University of Alabama at Birmingham, Birmingham, AL

10.1136/jim-2022-SRMC.474

**Case Report** A 14-year-old male presented with acute onset altered mental status, dizziness, and intractable emesis. Neurologic exam significant for delayed speech, dysdiadochokinesia, and right-sided dysmetria. Other than a mildly elevated lactic acid level, lab results including cerebrospinal fluid indices were unremarkable. Computed tomography (CT) of the head without contrast revealed an indeterminate right frontal lobe white matter hypodensity. Magnetic resonance imaging of the brain showed an acute ischemic stroke involving the right posterior inferior cerebellar artery (PICA) with associated compression of the fourth ventricle. CT angiography of the head and neck revealed poor opacification of the distal portions of the right and left PICAs, with right smaller than left. Patient’s last known normal was approximately 24 hours prior, therefore he did not qualify for thrombolytic or surgical intervention.

**Hospital Course** Patient was admitted to the intensive care unit and antiplatelet therapy was initiated. His hospital course was complicated by post-infarct hydrocephalus and need for external ventricular drain (EVD) placement. He ultimately required emergent suboccipital decompressive craniectomy and C1 laminectomy. His neurologic exam improved postoperatively. Cerebral angiogram prior to discharge was negative for residual defects. Workup for hypercoagulability, arteriopathy, intracardiac defects, or other connective tissue disorders was unremarkable.

**Discussion** Pediatric acute ischemic strokes (AIS) are rare but often involve long term and life-threatening neurologic deficits. The incidence of AIS in the US is 5.6 per 100,000 children. Incidence is bimodal with peaks in the neonatal period and in 10–18 year olds. Males are more commonly affected and most patients have no identifiable risk factors. Pediatric AIS data is limited, but posterior circulation AIS (PC AIS) appears to be less common than anterior, similar to adult
A CASE WITH SHORT-CHAIN ENOYL COENZYME A HYDRATASE 1 DEFICIENCY PRESENTING WITH PROGRESSIVE ENCEPHALOMYELOPATHY AND CARDIAC ARREST SECONDARY TO SEVERE LEFT VENTRICULAR OUTFLOW OBSTRUCTION

A Gurung*, PR Cabrera, KP Sharma, M Sehgal, K Dolma, P Maertens. University of South Alabama Health System, Mobile, AL

10.1136/jim-2022-SRMC.475

Case Report

A 40-year-old female presented with a 5-month history of progressive numbness, weakness, and gait difficulty. She was evaluated for ten-day history of progressive numbness and pain in her lower extremities, bilateral ankle clonus, and hyperreflexia in the lower extremities. MRI brain, cervical spine, and lumbar spine with and without contrast revealed diffuse marrow signal abnormality and heterogeneity, severe left ventricular hypertrophy, and dynamic left ventricular outflow tract obstruction.

At 5 months of age, the infant had a cardiac arrest requiring cardiac resuscitation and intubation. Surgical correction was not possible due to the severity and progressive nature of the hypertrophic cardiomyopathy. Despite 3 weeks of supportive care, the patient did not have adequate respiratory effort to sustain life with spontaneous breathing. The pupillary, cough, and gag reflex were present. However, no posturing, meaningful movements or spontaneous eye-opening were noted. Cold caloric test was suggestive of intracranial ophthalmoplegia due to medial longitudinal fascicular injury. MRI showed extensive ischemic changes in the brain, brainstem, and spinal cord. Due to progressive neurological sequelae and underlying genetic condition, palliative care with the option for natural death was offered to the family.

Conclusion

ECHS1 deficiency, especially the congenital phenotype, is an extremely rare form of mitochondrial cardiomyopathy with progressive encephalomyelopathy. We believe that in our patient, cardiomyopathy started in-utero and may partially explain the progressive encephalomyelopathy. Due to the lack of extensive literature on the topic and wide variety of clinical presentations, diagnosis is challenging prompting us to suggest a more comprehensive neonatal metabolic screen.

#471

A CASE WITH SHORT-CHAIN ENOYL COENZYME A HYDRATASE 1 DEFICIENCY PRESENTING WITH PROGRESSIVE ENCEPHALOMYELOPATHY AND CARDIAC ARREST SECONDARY TO SEVERE LEFT VENTRICULAR OUTFLOW OBSTRUCTION

A Gurung*, PR Cabrera, KP Sharma, M Sehgal, K Dolma, P Maertens. University of South Alabama Health System, Mobile, AL

10.1136/jim-2022-SRMC.475

Case Report

Short-chain enoyl-CoA hydratase 1 (SCEH1) plays a pivotal role in catalyzing the second step in mitochondrial fatty acid oxidation and metabolism of branched-chain amino acids. The enzyme is coded by enoyl coenzyme A hydratase, short-chain 1 (ECHS1). It is an autosomal recessive condition that can present with connatal phenotype or infantile phenotype. The disease is characterized by hearing impairment, delayed motor and speech development, cardiomyopathy, neurologic degeneration, seizures, and hypotonia.

Case

We describe a 5-month-old term male, born vaginally without complications to a 16-year-old female as a product of consanguinity. Apgar score was 8 and 9 at 1 and 5 minutes. Due to concerns for respiratory distress, seizures, and severe hypotonia, the patient was transferred to the neonatal intensive care unit. On day 1, the neurosonography already revealed ventriculomegaly, increased echogenicity of periventricular white matter with periventricular cysts, and a left occipital stroke-like lesion. The infant had severe lactic acidosis, and spinal fluid revealed severe hypoglycorrachia and lactacidorrachia. Septic workup was negative and EEG revealed non-convulsive status. Urine organic acid profile showed a peak with a mass spectrum corresponding to 2-methyl-3-hydroxybutyric acid. Two disorders have been associated with this metabolite: SCEH1 and 3-hydroxyisobutyryl-CoA hydrolase deficiency. The child was found to be homozygous for ECHS1 exon 8 codon 814 C>T point mutation which is highly conserved. Echo was significant for severe concentric left ventricular hypertrophy with dynamic left ventricular outflow tract obstruction.

At 5 months of age, the infant had a cardiac arrest requiring cardiac resuscitation and intubation. Surgical correction with hyperhomocysteinemia leading to hyperhomocysteinemia was not possible due to the severity and progressive nature of the hypertrophic cardiomyopathy. Despite 3 weeks of supportive care, the patient did not have adequate respiratory effort to sustain life with spontaneous breathing. The pupillary, cough, and gag reflex were present. However, no posturing, meaningful movements or spontaneous eye-opening were noted. Cold caloric test was suggestive of intracranial ophthalmoplegia due to medial longitudinal fascicular injury. MRI showed extensive ischemic changes in the brain, brainstem, and spinal cord. Due to progressive neurological sequelae and underlying genetic condition, palliative care with the option for natural death was offered to the family.

Conclusion

ECHS1 deficiency, especially the congenital phenotype, is an extremely rare form of mitochondrial cardiomyopathy with progressive encephalomyelopathy. We believe that in our patient, cardiomyopathy started in-utero and may partially explain the progressive encephalomyelopathy. Due to the lack of extensive literature on the topic and wide variety of clinical presentations, diagnosis is challenging prompting us to suggest a more comprehensive neonatal metabolic screen.
from L4-S1 contributed to the motor and sensory deficits experienced by this patient. Emergent surgical decompression was planned after clearance from the patient’s cardiologist. This case demonstrates the high level of clinical suspicion required to diagnose diseases outside a physician’s daily practice. In cases such as this one, the patient receives the highest quality of care when providers work collaboratively and utilize a multisciplinary approach to holistically evaluate a chief complaint.

#473 MY BRAIN’S VEINS TOO THICK: COBALAMIN DEFICIENCY WITH HYPERHOMOCYSTEINEMIA LEADING TO CEREBRAL VENOUS THROMBOSIS

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10.1136/jim-2022-SRMC.477

Case Report Hyperhomocysteinemia, an atherosclerotic catalyst, may result from the deficiency of vitamin B12 (cobalamin), vitamin B6 (pyridoxine), or vitamin B9 (folate). Pernicious anemia (PA) is an autoimmune condition associated with positive anti-intrinsic factor and anti-parietal cell antibodies that provoke the onset of B12 deficiency and, hence, hyperhomocysteinemia. PA is observed in 0.1% of the population and, more often than not, in the elderly. Ultimately, this hypercoagulable state predisposes to thrombotic events including cerebral venous thrombosis (CVT), which has an incidence of 3–4 cases per 100,000 people [1]. We herein present the case of a middle-aged female with B12 deficiency and hyperhomocysteinemia secondary to PA leading to extensive bilateral CVT.

Case presentation A 40-year-old female presented with a severe, generalized headache of 3 days duration. She rated the pain as 10/10 in severity, and headed to the hospital only after an episode of emesis. The patient was on a Depo implant for birth control. She smoked 6 cigarettes a day for 20 years, no history of alcohol use, and had been sober of methamphetamine for 15 months. On examination, vitals were within normal limits, and no focal neurological deficits were noted. Hemoglobin measured 13.7 g/dL. However, MCV was 101 fl which prompted a macrocytosis work-up. B12 level was found to be low at <159 pg/mL and folate level low-normal at 3.03 ng/mL. Anti-parietal cell antibody was elevated at 53, and anti-intrinsic factor antibody was positive. Her homocysteine level was elevated at 102 umol/L with a normal methylmalonic acid value. CTA head followed by MRV revealed venous sinus thrombosis of the left superior sagittal sinus, extending all the way to the left jugular vein along with right sided thrombosis from the straight sinus to the sigmoid sinus. She was started on anticoagulation with therapeutic lovenox, bridged to warfarin, and reached a goal INR of 2–3. The patient’s B12 deficiency was treated with daily B12 1000 mcg intramuscular injections, arrangement of weekly outpatient B12 injections and a follow up in the warfarin clinic. She was also discharged on folic acid with a recommendation to undergo an endoscopy as an outpatient.

Discussion This case highlights several unusual features: the patient’s young age in conjunction with a diagnosis of pernicious anemia, no gastrointestinal manifestations, no neurological deficits, and she did not have anemia but rather macrocytosis. While it is possible that her birth control and remote history of recreational drug abuse could have been additional contributing factors to CVT, we believe her elevated homocysteine levels owing to B12 deficiency led to this large, extensive, bilateral CVT. Therefore, when a patient has a hypercoagulable event, it would be prudent to check homocysteine levels alongside a thorough thrombophilia work-up.

REFERENCE

#474 NO LAUGHING NEUROPATHY: POLYNEUROPATHY FROM NITROUS OXIDE-INDUCED VITAMIN B12 DEFICIENCY

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10.1136/jim-2022-SRMC.478

Introduction Nitrous oxide inhalation is an uncommon but significant cause of B12 deficiency.

Case A 29-year-old woman with recreational nitrous oxide use was evaluated for ten-day history of progressive numbness and ‘pins and needles’ that began in her feet and rapidly ascended to her umbilicus, sternum and hands. The patient presented after a single-vehicle motor vehicle accident where she could not press the brake pedal, resulting in admission for evaluation her progressive sensory-motor abnormalities. Physical exam was significant for oral ulcerations, sensory polyneuropathy, poor position and vibration sensation, sensory ataxia and hyperreflexia in the lower extremities, bilateral ankle clonus, lower extremity weakness, poor grip strength and inability to stand/bear weight without full assistance. Lab work revealed undetectable B12 level (<14), elevated methylmalonic acid, macrocytic anemia with Hb 8.5 gm/dL and negative intrinsic factor. MRI brain, cervical spine and lumbar spine w/o contrast noted diffuse narrow signal abnormality and heterogeneous T2 hyperintense signal throughout the cerebral cord, consistent with posterior column myelopathy due to B12 deficiency. The patient reported 2 months of almost daily
recreational nitrous oxide inhalation, using 100–300 whippet cannisters/day and no other significant risk factors for B12 deficiency. She was prescribed intramuscular B12 replacement with subsequent daily oral supplementation. Two months later, her B12 level was normal, oral ulcers resolved and functional status was markedly improved.

Discussion This case illustrates an unusual but severe presentation of vitamin B12 deficiency, and particularly, the potential for significant side effects associated with chronic nitrous oxide inhalation. Nitrous oxide, when cleaved to nitrogen and oxygen components, inactivates vitamin B12, a cofactor for enzymes involved in myelin and DNA synthesis. High clinical suspicion and prompt diagnosis are important factors in preventing significant neurologic damage from a recreational habit often mistaken by patients as benign.

Perinatal medicine I
Concurrent session
2:00 PM
Friday, February 11, 2022

#475 INTRANASAL INSULIN DECREASES PERSISTENT NEURONAL DEGENERATION FOLLOWING NEONATAL HYPOXIA-ISCHEMIA IN JUVENILE RATS

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10.1136/jim-2022-SRM1.479

Purpose of Study Hypoxic-ischemic (HI) encephalopathy (HIE) remains a significant cause of morbidity and mortality in neonates. Despite the current standard of care, therapeutic hypothermia, many infants develop cerebral palsy and long-term cognitive deficit. Our previous study has shown that intranasal insulin (InInsulin) administered immediately following HI exposure in P10 rats protects against HI-induced sensorimotor disturbances, long-term memory abnormality in P25 rats. Interestingly, we noted evidence of persistent inflammation in the form of an increase in microglia in the hippocampus at P25 following HI at P10, which InInsulin reduced. The objective of the current project is to test the hypothesis that HI causes ongoing hippocampal damage at P25 following HI injury at P10, and InInsulin mitigates those changes.

Methods Used At postnatal day 10 (P10), Sprague-Dawley rat pups were randomly divided into four groups: HI+Insulin (Ins); HI+Vehicle (Veh); Sham+Insulin; Sham+Veh, with an equal male/female ratio. Pups either had HI exposure by permanent ligation of the right carotid artery followed by 90 min of hypoxia (8% oxygen) or sham surgery followed by room air exposure. Immediately after HI or Sham, pups received either intranasal recombinant human insulin (25 µg) or an equivalent volume of Veh (Phosphate buffer solution) in each naris, followed by 2 more doses every 24 h. In addition, the hippocampal injury was examined by fluoro-Jade-c staining in the dorsal hippocampus area. We followed Institutional Animal Care and Use Committee (IACUC) guidelines of the University of Mississippi Medical Center, in accordance with the Guide 8th edition, for the Care and Use of Laboratory Animals published by the US National Institute of Health.

#476 MATERNAL HIGH FAT DIET EXPOSURE INCREASES THE EXPRESSION OF FATTY ACID TRANSPORT REGULATORS IN THE PLACENTA AND IS DEPENDENT ON THE MATERNAL MICROBIOME

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10.1136/jim-2022-SRM1.480

Purpose of Study Obesity is a significant problem affecting 42.4% of Americans and contributing to at least 2.8 million annual deaths globally.1,2 We know that offspring born to parents with obesity are more likely to be obese. Although obesity is multifactorial, high fat diet plays an important role. The intestinal microbiome is also important in development of obesity; germ-free mice are protected against high fat diet induced obesity. We hypothesized that maternal high fat diet (mHFD) exposure may increase the transport of fatty acids to the fetus and would be dependent on the presence of the maternal microbiome.

Methods Used The baseline placental expression of fatty acid transport proteins FATP1, and FATP4, fatty acid binding proteins FABP1, FABP4, and PPARY, amino acid transporters SNAT1, SNAT2, LAT1, and LAT2, and cytokines IL-6, IL1-B, and TNFα were profiled by real-time PCR from conventional and germ-free fetuses after C-section at E20 in mothers exposed to either 60% high fat diet during pregnancy or regular diet (controls).

Summary of Results In conventional mice, we found that FATP1 was increased 32-fold in the mHFD placenta compared to controls (p-value 0.000088). FABP4 was increased 7-fold (p-value 0.047) and IL-6 was increased 16-fold (p-value 0.00013). There was no difference in placental expression of amino acid transporters in mHFD placenta compared to controls. In germ free mice, we found no difference in any of
the above fatty acid transport proteins, fatty acid binding proteins, amino acid transporters, or cytokines.

**Conclusions** Fatty acid transport regulators in the placenta were increased after exposure to mHFD. This increased expression upon exposure to mHFD was dependent on the maternal microbiome. Western blot analysis is ongoing to determine if the protein expression of FATP1, FABP4, and IL-6 is increased in the mHFD conventional placenta. Future studies focused on confirming whether fatty acids are increased in the plasma of the fetus are needed. These findings are significant in demonstrating how maternal HFD exposure can modulate fetal metabolism and may be an opportunity for future development of therapeutics that target placental transporters in obese mothers to minimize the metabolic outcomes in offspring.

**REFERENCES**


### Abstracts

**#477** MATERNAL HIGH FAT DIET EXPOSURE RESULTS IN MATERNAL MICROBIOME DEPENDENT INCREASE IN INFLAMMATORY CYTOKINES AND NURR1 IN OFFSPRING BRAIN

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**Purpose of Study** Fat consumption in the US has increased over time with the average American diet consisting of over 40% fat, contributing to the steady rise in obesity over the last decade. Maternal high fat diet (mHFD) is known to alter both the maternal and offspring microbiome and intestinal immunity. Further, recent data support a role for the maternal microbiome in modifying neurodevelopment in neonatal murine offspring. The effect of mHFD on neurodevelopment of offspring remains understudied. We hypothesized that mHFD exposure will result in a microbiota dependent increase in inflammation and inhibition of axonal development in offspring brain

**Methods Used** Conventional and germ-free dams were exposed to 60% high fat diet (HFD) or control diet (CD) for 4 weeks prior to mating. Offspring brains were collected at 2-weeks of life and examined for inflammatory (TNF-a, IL-6, IL-17A, IL1b and TGFb) and regulatory markers of neuronal development (Nurr1) by quantitative RT-PCR. Nissl staining of brain tissue is ongoing to quantify neurons in mHFD and control offspring

**Summary of Results** When compared with the CD offspring, mHFD offspring had a significant increase in the inflammatory cytokines IL-17A (2-fold increase, p<0.05) and IL-6 (3-fold increase, p<0.05) compared to controls. Nurr1 was increased 30-fold in mHFD offspring (p<0.01). In germ-free mHFD offspring, there was no difference in IL-17A, IL-6 or Nurr1 expression when compared to germ-free regular diet offspring. Quantification of neurons by Nissl staining is currently under investigation.

**Conclusions** mHFD exposure resulted in an increase in inflammatory cytokines and markers of neuronal development in offspring brain. These effects appear to be dependent on the maternal microbiome. We speculate that maternal diet interacts with the maternal microbiome to increase immune activation in the fetal circulation and brain. Further studies to quantify and qualify neonatal brain development and injury in mHFD offspring are on-going.

**#478** THE EFFECTIVENESS OF A CUE-BASED FEEDING PROTOCOL IN IMPROVING TIME TO NIPPLE FEED AND TIME TO DISCHARGE IN VERY LOW BIRTHWEIGHT INFANTS

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**Purpose of Study** Oral feeding is a skill infants need to demonstrate before discharge from a neonatal intensive care unit (NICU). The coordinated suck-swallow-breath pattern is not fully developed before 32 to 34 weeks postmenstrual age (PMA), so for preterm infants, initiation of oral feeding prior to this poses risk of aspiration and subsequently apnea, bradycardia and respiratory depression. Previous ‘traditional’ methods of assessing readiness to oral feeding were subjective with significant inter-provider variation. The cue-based-feeding method has the potential to offer a more objective and infant-driven way to gauge readiness to oral feeding. However, published data are conflicting on its effectiveness in improving feeding outcomes. Our objective was to compare time to initial and full nipple feeding and duration of hospital stay in very low birthweight (VLBW) infants before and after the implementation of a cue-based feeding protocol in a level III regional perinatal center.

**Methods Used** VLBW infants born from August 2013 through December 2019 were identified. Infants with congenital anomalies and necrotizing enterocolitidis were excluded. The pre-protocol cohort included infants born from August 2013 through April 2016 and the post-protocol cohort included infants born from January 2017 through December 2019. Demographic information, feeding, and discharge data were recorded and compared between the two cohorts. The chi-squared test for differences in nominal and ordinal data, Mann-Whitney for continuous data, and Kruskal-Wallis for continuous data with more than 2 categories were used.

**Summary of Results** After exclusions, 272 patients were included in the pre-protocol cohort and 314 patients in the post-protocol cohort. Both cohorts were statistically comparable in gestational age, gender, race, birthweight, prenatal care, antenatal steroid use, and rates of maternal diabetes. There were statistically significant differences between pre-vs. post-protocol cohorts in median PMA in days at first PO feed (240 vs 238, p<0.05), PMA in days at full PO (250 vs 247, p<0.05), and length of stay (LOS) (55 vs 48, p<0.05). When separating by year, PMA at first PO, PMA at full PO, and length of stay fell in 2017 compare to pre-data, again in 2018, and then rose in 2019.

**Conclusions** The cue-based feeding protocol showed a median decrease in PMA at first PO feed by 2 days and PMA at full PO feeds by 3 days. By decreasing time to first PO feed and full PO feed, the infants were able to be discharged earlier, decreasing financial burden on both patients
and the health care system. The increase in the feeding factors and length of stay in 2019 is likely due to loss of excitement and trust in the protocol. With this data, we plan to increase awareness of its effectiveness and implement a structured continued education program regarding its use. Cue-based feeding seems to be an effective quality improvement tool.

**#479 MATERNAL OVERNUTRITION AND LEPTIN INSENSITIVITY IN NEONATAL RAT LUNG TISSUE**

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**Methods** Sprague-Dawley rats were on a control diet (CD; 18% calories as fat) or HFD (40% calories as fat) for four weeks before mating, continued on CD or HFD throughout pregnancy and parturition. Dams on HFD had 2.25-fold weight gain during pregnancy with 2-fold greater postpartum circulation of leptin. SDS-PAGE/immunoblot was used to determine pulmonary protein expression for leptin receptor (OBR-B), FOXO1 (p-ser249), STAT3, and PTP1B in P1 female offspring from CD and HFD dams (n=8). ImageJ was used for densitometry and a student’s t-test was performed.

**Summary of Results** Although OBR-B expression in maternal HFD offspring was increased 2.02-fold ($p<0.0001$), expression of the terminal transcriptional factor of leptin signaling, STAT3, was decreased 2.17-fold ($p=0.0042$). Further, FOXO1 is a negative regulator of STAT3 transactivation and FOXO1 expression was increased 2.63-fold ($p<0.0005$) without any change in phosphorylation status (p-ser249 inhibits FOXO1-dependent STAT3 inhibition). Lastly, there was no differences in the PTP1B levels between the two groups ($p=0.7611$).

**Conclusions** Our data support the hypothesis that pulmonary leptin insensitivity occurs in offspring of HFD dams. Leptin signaling is inhibited via increased FOXO1 expression, and likely compensatory upregulation of OBR-B cannot compensate due to loss of STAT3. Impaired leptin signaling could contribute to pulmonary pathologies in the offspring of mothers with overnutrition and obesity. Ongoing studies will continue to investigate this hypothesis by profiling leptin-dependent metabolites and activation of additional downstream gene targets such as SOCS3.
Abstracts

#480 LATE PERMISSIVE HYPERCAPNIA FOR INTUBATED AND VENTILATED PRETERM INFANTS (HYFIVE): A RANDOMIZED CLINICAL TRIAL

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Purpose of Study Permissive hypercapnia is commonly used among preterm infants to reduce ventilator support and ventilator-induced lung injury. We tested the hypothesis that among preterm infants who remain intubated on postnatal day 7–14, higher targets of permissive hypercapnia (HPH) with a PaCO2 of 60–75 mmHg and pH ≥ 7.20 compared with lower targets of permissive hypercapnia (LPH) with a PaCO2 goal of 40–55 mmHg and pH ≥ 7.25 increases the number of days infants are alive and off mechanical ventilation in the 28 days after randomization.

Methods Used Single-center randomized controlled trial with a 1:1 parallel allocation to either HPH or LPH among preterm infants ≥ 22w 0d with respiratory distress syndrome intubated from day 7–14 after birth. The primary outcome was the number of days alive and ventilator-free in the 28 days after randomization. A sample of 130 infants was required to detect a 4-day difference in the number of days alive and ventilator-free with a standard deviation of 7 days, 90% power, and a two-tailed type-I error rate of 0.05. All analyses were planned a priori and by intention to treat. The results were analyzed by independent samples t-test for continuous data and c2 or Fisher’s exact test for categorical data.

Summary of Results 130 infants with a mean gestational age of 24w 5d ± 2w 0d and birth weight of 657 ± 198 grams were enrolled from December 2015 to May 2021. Infants randomized to HPH had more alive ventilator-free days compared with infants randomized to LPH (11 ± 6 versus 6 ± 8, p=0.01). The HPH group had more non-invasive respiratory support days compared with the LPH group (9 ± 5 versus 5 ± 6; p=0.01). Grade 2–3 broncho-pulmonary dysplasia (BPD) or death before discharge trended lower among infants in the HPH group (HPH 30/62 (48.3%) versus LPH 45/68 (66.2%); relative risk (RR) 0.73, 95% confidence intervals (CI) 0.54–0.99; p=0.06). The risk of grade 2–3 BPD among survivors at 36 weeks postmenstrual age did not differ between groups (HPH 19/53 (36.5%) versus LPH 28/53 (52.8%); RR 0.68, 95% CI 0.44–1.06; p=0.12). The risk of death before discharge also did not differ between groups (HPH 16/62, 25.8% versus LPH 20/68, 29.4%; RR 0.87, 95% CI 0.50–1.54; p=0.79). Other secondary outcomes including the number of reintubations, treatment with postnatal steroids, pulmonary hypertension on echocardiogram, hemodynamically significant patent ductus arteriosus, stage ≥ 2 necrotizing enterocolitis, and late intracranial hemorrhage did not differ between groups.

Conclusions Targeting higher levels of permissive hypercapnia beginning on postnatal day 7–14 increased the number of days alive and ventilator-free in the 28 days after randomization compared with targeting lower levels of permissive hypercapnia. The difference in the rate of grade 2–3 BPD or death before discharge was not statistically significant, although the current study was not powered for this outcome.

#481 EARLY PREMATURE INFANTS ON RESPIRATORY SUPPORT: A FUNCTIONAL EARLY ENTERAL DEVELOPMENT (FEED) RANDOMIZED CONTROL TRIAL

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Purpose of Study A goal for preterm infants admitted to the neonatal intensive care unit includes establishing oral feeding skills with sufficient volume for discharge home. Achieving full oral feedings is often delayed in early preterm infants requiring respiratory support. A recent quality improvement study demonstrated oral feeding while on nasal continuous positive airway pressure (nCPAP) decreased the length of hospitalization in infants with chronic lung disease. A systematic review published in 2021 reported insufficient evidence to support oral feeds while on nCPAP and high flow nasal cannula (HFNC) without further studies. We hypothesize infants greater than 32 weeks on nCPAP or HFNC can safely achieve full oral feedings sooner and thereby decrease length of hospitalization.

Methods Used A single center randomized controlled trial enrolling infants greater than 32 weeks post menstrual age (PMA) requiring HFNC > 2 LPM or nCPAP ≤ 6 cm H2O FiO2 ≤ 30% for 72 hours or more and tolerating enteral feeds of 120 ml/kg/day. The primary outcome measured was PMA an infant achieved full oral feedings. The secondary outcomes measured were PMA an infant completed a first oral feed, length of hospitalization, PMA at hospital discharge, gastrostomy tube (GT) placement, oxygen at discharge and aspiration pneumonia diagnosis during study participation. Infants meeting inclusion criteria were randomized to either the oral feed intervention group (OFG) or usual care group (UCG) at a one-to-one ratio within two strata of respiratory support and gestational age with variable block size. The infants enrolled in the OFG were evaluated by occupational therapy utilizing an established infant feeding advancement protocol. Oral feeding advancement strategies utilized pacifier dips, syringe controlled 1–4 ml open nipple, 5 ml and 10 ml. A sample size of 38 patients is needed to achieve a statistically significant 2-week difference between both groups.

Summary of Results Of 80 patients meeting inclusion criteria, 25 patients were consented and enrolled to participate. Results are on completed data on 18 subjects (11 OFG (61%) vs 7 UCG (39%)). The mean PMA at full oral feeds (OFG 38.5 weeks (SD 2.6) vs. UCG 38.2 weeks (SD 2.4)), mean PMA at completion of first oral feed (OFG 37.4 weeks (SD 2.8) vs. UCG 37.3 weeks (SD 3.4)), mean PMA at discharge (OFG 40.9 weeks (SD 4.5) vs UCG 41.2 weeks (SD 4.4)) were similar. The mean length of hospitalization was slightly less in OFG 94.1 days (SD 29.4) compared to UCG 97.6 days (SD 36.8). No aspiration pneumonia diagnosis documented in either group. One infant in each group required a GT and did not achieve full oral feeds.

Conclusions There is no significant difference in PMA at full oral feeds and PMA at completion of first oral feed between the OFG and UCG. Further secondary analysis is currently ongoing such as frequentist and bayesian analysis to determine differences between groups and probability of benefit of the intervention.
RED BLOOD CELL VOLUME, BUT NOT PLATELET OR PLASMA VOLUME IS ASSOCIATED WITH MORTALITY IN NEONATAL EXTRA CORPOREAL MEMBRANE OXYGENATION

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Purpose of Study
Blood product transfusions are necessary for critically ill neonates on extracorporeal membrane oxygenation (ECMO). Transfusions are administered in response to unstudied arbitrary thresholds and may be associated with significant morbidity and mortality. The purpose of this study was to examine the relationship between blood product transfusion volume and mortality in neonates receiving ECMO support for respiratory indications.

Methods Used
A retrospective review of neonates receiving ECMO support for respiratory indications from 2002 to 2019 was analyzed from a single quaternary-referral Neonatal Intensive Care Unit (NICU). Demographic, outcome data, and transfusion volume (ml/kg/day) were harvested from the medical record, and baseline mortality risk was assessed using the Neo-RESCUERS score. The association between volume of red blood cells (RBC), platelet, and plasma transfusion rates (ml/kg/day) and mortality on ECMO were assessed after adjustment for Neo-RESCUERS score. Cox Proportional Hazards (CPH) competing risk model was used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for each variable and mortality outcome. Adjusted cumulative incidence curves were generated.

Summary of Results
Among 248 neonates undergoing ECMO for respiratory failure, overall survival was 93%. RBC, platelet, and plasma volume were highly associated with mortality during ECMO in an unadjusted model. After adjusting for NEO-RESCUERS score, RBC volume was associated with mortality during ECMO (HR 1.013, 95% CI 1.004–1.022, p=0.0043), but platelet and plasma volume were not associated with mortality on ECMO.

Conclusions
RBC transfusion volume, but not platelet or plasma volume, is associated with increased mortality in neonates while on ECMO. Our findings refute previously published studies demonstrating an association between platelet volume and mortality for neonates on ECMO.

HYPEROXIA EXPOSURE ALTERS ANTIMICROBIAL PEPTIDE PRODUCTION AND THE MICROBIOTA OF THE NEWBORN SMALL INTESTINE

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Purpose of Study
Emerging research has identified inter-organ connections between the gut and the lung, however, the focus has been on alterations in lung physiology, leaving changes in the intestine unexplored. In preterm newborns, where immaturity-related diseases of the gut and lung are primary drivers of morbidity, we hypothesized that exposure to hyperoxia would alter the intestinal microbiota and thereby increase the severity of lung injury.

Methods Used
Utilizing our established hyperoxia-exposure mouse model of neonatal lung injury (FiO2 0.85 or 0.21 for days 3–14 of life), we used an unbiased RNAseq and MiSeq-based approach to simultaneously observe parallel changes in host gene expression and the bacterial microbiome in the lung and terminal ileum of 14-day-old mice with or without hyperoxia exposure.
Abstracts

exposure to hyperoxia. Next, to identify if differences in antimicrobial peptides (AMPs) could alter neonatal lung injury, we orally gavaged newborn mice with the most common AMP, lysozyme (10,000 u/g), for the first three days of life followed by exposure to hyperoxia or normoxia. Finally, to directly observe differences in intestinal gene expression, we performed RNAseq on mouse small intestinal epithelial cell-derived organoids.

Summary of Results In the intestine, we identified a replacement of anaerobic bacteria by aerotolerant species, in particular a replacement of the genus Lactobacillus with Staphylococcus (figure 1a) that was associated with an intriguing hyperoxia-induced decrease in AMPs (figure 1b). Lysozyme supplementation decreased the severity of lung injury as assessed by histology and pulmonary function testing (figure 1c). Pulmonary gene expression and the intestinal microbiome were also altered.

Conclusions Our work suggests that hyperoxia-induced decreases in antimicrobial peptides alter the mucosal intestinal microbiome, thereby contributing to gut and lung injury. Antimicrobial peptides may constitute a targetable pathway to alter microbiome-mediated lung injury in newborns.

Purpose of Study To study the effects of small for gestational age (SGA) status on long-term outcomes and growth, a cohort of 270 singleton infants born <1500 g between 2008–2017 who were SGA (defined by the Fenton growth curve as <10th percentile) were compared to a cohort of 900 average gestational age (AGA) infants who were matched for post-menstrual age. We hypothesized the SGA cohort would have inferior neurodevelopmental outcomes when compared to the AGA group.

Methods Used We reviewed the Medical University of South Carolina Perinatal Information System, an electronic database, and included infants born at MUSC from 2008–2017 who were singleton births and <1500 grams. After discharge, infants returned to an outpatient clinic for former preterm infants which completed medical and neurodevelopmental assessments, were also included in this study. During this time, we provided early parenteral nutrition, and a rapid feeding protocol for mother's milk, donor milk, or formula was used. A multivariate linear regression to evaluate variables associated with neurodevelopment was adjusted for gender, birth gestational age, age in months at follow-up, and gains in length, head circumference, and weight from discharge to visit. Significance was defined as p-value <0.05.

Summary of Results 23.1% of infants were SGA over this 9-year period. Of those evaluated, SGA infants grew similarly to AGA infants in weight, length, and head circumference (HC) at discharge (p<0.001). Infants in both groups were predominately Black (n=718) followed by white (n=386). Infants in the SGA group consistently had z-scores substantially below the AGA group. The SGA HC at birth and discharge z-scores were -1.07 and -1.67, compared to AGA which was 0.27 and -0.59 respectively. These findings were in the setting of significantly worse Grade III/VI IVH and BPD outcomes in the AGA group (p=0.02 and <0.001).

Between 5–15 months of chronologic age, 58.1% of AGA infants and 62.2% of SGA infants returned for evaluation. There were no changes in demographics between the hospital and follow up clinic. Along with this, there was no difference in length and weight gain/kg/day. Overall, AGA follow up patients grew more appropriately in all parameters with z-scores consistently higher than SGA infants. SGA catch up growth did not appear to occur in the NICU or the follow up period tracked in this study.

After adjusting for variables including gender, birth gestational age, months at visit, and growth from discharge to visit, lower adjusted language and gross motor raw scores were associated with SGA worse language and gross motor scores (p=0.005 and p=0.006 respectively).

Conclusions Despite strategies of early rapid nutrition, SGA infants are at high risk of neurodevelopmental impairment in language and gross motor domains. Expected SGA weight gain exceeding AGA infants was not seen. This may explain worse neurodevelopmental outcomes. Novel care strategies may be needed for this populations to improve outcomes in both catch up growth and development.

#484 SMALL FOR GESTATIONAL AGE STATUS AFFECTS GROWTH AND NEURODEVELOPMENTAL OUTCOMES IN VERY LOW BIRTH WEIGHT INFANTS

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Purpose of Study To study the effects of small for gestational age (SGA) status on long-term outcomes and growth, a cohort of 270 singleton infants born <1500 g between 2008–2017 who were SGA (defined by the Fenton growth curve as <10th percentile) were compared to a cohort of 900 average gestational age (AGA) infants who were matched for post-menstrual age. We hypothesized the SGA cohort would have inferior neurodevelopmental outcomes when compared to the AGA group.

Methods Used We reviewed the Medical University of South Carolina Perinatal Information System, an electronic database, and included infants born at MUSC from 2008–2017 who were singleton births and <1500 grams. After discharge, infants returned to an outpatient clinic for former preterm infants which completed medical and neurodevelopmental assessments, were also included in this study. During this time, we provided early parenteral nutrition, and a rapid feeding protocol for mother's milk, donor milk, or formula was used. A multivariate linear regression to evaluate variables associated with neurodevelopment was adjusted for gender, birth gestational age, age in months at follow-up, and gains in length, head circumference, and weight from discharge to visit. Significance was defined as p-value <0.05.

Summary of Results 23.1% of infants were SGA over this 9-year period. Of those evaluated, SGA infants grew similarly to AGA infants in weight, length, and head circumference (HC) at discharge (p<0.001). Infants in both groups were predominately Black (n=718) followed by white (n=386). Infants in the SGA group consistently had z-scores substantially below the AGA group. The SGA HC at birth and discharge z-scores were -1.07 and -1.67, compared to AGA which was 0.27 and -0.59 respectively. These findings were in the setting of significantly worse Grade III/VI IVH and BPD outcomes in the AGA group (p=0.02 and <0.001).

Between 5–15 months of chronologic age, 58.1% of AGA infants and 62.2% of SGA infants returned for evaluation. There were no changes in demographics between the hospital and follow up clinic. Along with this, there was no difference in length and weight gain/kg/day. Overall, AGA follow up patients grew more appropriately in all parameters with z-scores consistently higher than SGA infants. SGA catch up growth did not appear to occur in the NICU or the follow up period tracked in this study.

After adjusting for variables including gender, birth gestational age, months at visit, and growth from discharge to visit, lower adjusted language and gross motor raw scores were associated with SGA worse language and gross motor scores (p=0.005 and p=0.006 respectively).

Conclusions Despite strategies of early rapid nutrition, SGA infants are at high risk of neurodevelopmental impairment in language and gross motor domains. Expected SGA weight gain exceeding AGA infants was not seen. This may explain worse neurodevelopmental outcomes. Novel care strategies may be needed for this populations to improve outcomes in both catch up growth and development.

#485 COSTS ASSOCIATED WITH ACUTE KIDNEY INJURY IN CRITICALLY ILL NEONATES WITH PATENT DUCTUS ARTERIOSUS: ANALYSIS OF DATA FROM THE PEDIATRIC HEALTH INFORMATION SYSTEMS DATABASE

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Purpose of Study Neonates in the neonatal intensive care unit (NICU), particularly those with patent ductus arteriosus (PDA), are at increased risk for acute kidney injury (AKI), yet the economic impacts of AKI development in critically ill neonates have never been explored. We aimed to compare estimated costs of hospitalization between neonates with PDA who did and did not develop AKI.

Methods Used Using data collected from the Children’s Hospital Association’s Pediatric Health Information Systems database, we ascertained the marginal estimated total cost of hospitalization between those with PDA who did and did not develop AKI.

Methods Used Using data collected from the Children’s Hospital Association’s Pediatric Health Information Systems database, we ascertained the marginal estimated total cost of hospitalization between those with PDA who did and did not develop AKI.

Summary of Results Data from 14,217 neonates, 1,697 with AKI and 12,520 without AKI, were included (table 1).

Significant predictors of cost (all p<0.01) included AKI, BW, ethnicity, race, LOH, and CCC. LOH differed between groups and was the strongest predictor of cost (AKI: median 71 days [IQR 28–130]; No AKI: 28 [10–76]; p<0.01). Neonates with AKI had, on average, $48,416 greater costs (95% CI: $43,804–53,227) after adjusting for these predictors (AKI: $190,063, 95% CI $183,735–196,610; No AKI: $141,647, 95% CI $139,931–143,383).
Abstracts

#485 ELEVATED SERUM PHOSPHATE LEVELS EXACERBATE CHRONIC LUNG DISEASE

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Purpose of Study Phosphorous, which mainly exists as phosphate in its oxidized circulating form, is the second most common mineral found in the human body and is utilized in many biological processes. Although well-documented in chronic kidney disease (CKD), the role of phosphate in chronic lung disease (CLD) is not widely known. We have shown that fibroblast growth factor 23 (FGF23), a key regulator of phosphate metabolism, is elevated during systemic inflammation and in inflammatory lung diseases such as chronic obstructive pulmonary disease (COPD) and idiopathic pulmonary fibrosis (IPF). The dysregulation of phosphate homeostasis can induce systemic inflammation and increased FGF23 contributes to unfavorable clinical outcomes. In the interest of optimizing quality of life and health outcomes for patients with CLD, we wanted to examine the direct actions of phosphate on the lung and determine a potential comorbidity with CKD.

Methods Used For our in vitro experiments, human lung fibroblasts were treated with concentrations of 1 to 5 mM sodium phosphate. Expression levels of interleukin (IL)-1β, IL-6, and IL-8 were analyzed by qPCR and secretion of these cytokines was measured by ELISA. Phosphorylation of PLCγ and ERK was measured by western blot. Using an in vivo approach, we placed C57Bl/6 mice on a high phosphate (3%) diet to elevate serum phosphate levels in the absence of kidney injury and administered bleomycin via oropharyngeal aspiration to generate an acute inflammatory response. Serum FGF23 levels were measured by ELISA and serum analysis for phosphate and renal function were obtained. Furthermore, expression of FGF23 pathway and inflammatory markers were analyzed in murine lung tissue using qPCR and western blotting.

Summary of Results Augmented phosphate concentrations led to increased cytokine expression and secretion from human lung fibroblasts with concomitant increases in PLCγ and ERK phosphorylation. Serum FGF23 levels were significantly upregulated in mice on a high phosphate diet and further increased in mice subjected to a high phosphate diet with exposure to bleomycin. Both serum phosphate and creatinine levels were significantly elevated as well. Additionally, high phosphate and bleomycin increased local FGF23 expression in murine lung tissue, when compared to controls or each stimulus alone.

Conclusions Upregulation of FGF23 in response to bleomycin during a high phosphate diet suggests that inflammation induced by primary lung injury is worsened by systemic elevation of serum phosphate levels. Moreover, our data suggest that high serum phosphate levels may increase susceptibility and progression of lung injury. Our results indicate that the existence of a pulmonary-renal crosstalk is exaggerating pulmonary injury and that there are several biological pathways that may be targeted to mediate these effects.
Purpose of Study Genetic susceptibility and metabolic variation exist between sex and strain and this interaction is an important variable in determining susceptibility to lung injury especially in our young population. Underlying sex and strain differences have not been clearly investigated but are essential to understanding the unique molecular and pathological features of experimental disease models.

Methods Used We used an integrated transcriptome and metabolome approach to test for sex and strain-based differences in the functional pathway and network responses using C3H/HeN and C57Bl6 mice.

Summary of Results Results from multivariate analysis at P < 0.05 and FDR at 0.05 showed differentially expressed metabolites (m) and transcripts (t) between males and females (660 m, 484 t), C3H/HeN and C57Bl6 strains (921 m, 418 t) and as a result of interaction between sex and strain (374 m and 383 t). Metabolic pathway analysis using mummichog showed drug metabolism was the most common pathway affected by sex, strain and interaction. Oxidative stress-related pathways such as selenoamino acid metabolism reflected strain-based influence while methionine and cysteine pathway were influenced by combined interaction of sex and strain. Gene set enrichment analysis revealed inflammatory response as the underlying differential pathway in sex, strain and interaction-based transcriptomic differences. A host of inflammatory markers such as histamine, hydroxykynurenine, interleukins and TNF were altered based on sex and strain influences. Metabolic and transcriptomic analysis also revealed fatty acid metabolism including carnitine shuttle was altered by sex and influenced by interaction of sex and strain. Key fatty acid metabolites and genes such as carnitine, palmitoyl carnitine and FABP1 were significantly upregulated in males compared to females.

Conclusions Overall, these results suggest that underlying metabolic and transcriptomic differences in rodent sex and strain can directly inform model selection and strategies for drug development and exposure studies leading to appropriate translational findings.

#489 PEDIATRIC TRAUMA AND TRAUMA-RELATED MORTALITY IN THE UNITED STATES, 2007 TO 2015: A NATIONAL TRAUMA DATA BANK ANALYSIS

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Purpose of Study Trauma represents a significant health issue in the pediatric population and ranks among the most common causes of death in children. Our goal was to describe patterns of US pediatric trauma visits and stratify differences according to sex, age, and death.

Methods Used Retrospective analysis of children from the National Trauma Data Bank between the years 2007 to 2015. Data gathered included age, Glasgow coma score, mechanism of injury, injury type, and disposition. Patients were separated according to survivors versus non-survivors. Group comparisons were reported by number (%) and analyzed by the Chi-square test. Significant variables were included in a multivariable regression model with mortality as the primary outcome. Analyses were performed using R v4.0.1.

Summary of Results Of the 523,624 pediatric trauma cases reported, 1.4% (n=7542) were non-survivors. Of those who died, 69% (n=5,210) were male, 53% (n=3,994) were between the ages of 15–18, 64% (n=4,815) were secondary to blunt injury trauma, and 69% (n=5,201) were unintentional. Across all ages, the top two mechanisms of trauma-related deaths were motor vehicle accidents (29%, p<0.001) and firearm injury (22%, p<0.001).

Conclusions Although rare, pediatric trauma resulting in death is more likely to occur in adolescents who have incurred a gunshot injury or were involved in a motor vehicle collision. Future studies should target preventive measures in 15 to 18 year old children as they had the highest risk for death.
Purpose of Study Oxidative stress (OS) plays an important role in lung disease including acute lung injury (ALI) and pulmonary fibrosis (PF). Reactive oxygen species (ROS) regulate redox-sensitive transcription factors and genes associated with inflammation and extracellular matrix remodeling in lung disease. In the present study, we investigated whether glucosamine (GlcN) attenuates hydrogen peroxide ($H_2O_2$)-induced regulation of CCL18 gene which is involved in inflammation and pulmonary fibrosis.

Methods Used The A549 cells were exposed to $H_2O_2$, GlcN, or pretreated with GlcN or catalase then exposed to $H_2O_2$. The cells were treated with $H_2O_2$ (400 µM for 2 h) or pretreated with 5 mM of GlcN or catalase alone or in presence of $H_2O_2$ for 2 h. Total RNA was extracted using TRIzol and cDNA was generated and analyzed by real-time qPCR with specific primers. ROS, cell morphology, and ELISA were performed using fluorescent microscopy and ELISA kit.

Summary of Results Our results indicate that GlcN attenuated $H_2O_2$-induced upregulation of CCL18 mRNA. Exposure of A549 cells to 400 µM of $H_2O_2$ for 2 h induced a 6.68-fold increase of CCL18 mRNA vs control untreated cells. Pretreatment of cells with GlcN attenuated $H_2O_2$-dependent upregulation of CCL18 mRNA resulting in 1.11-fold vs 6.68-fold, respectively. ROS level was decreased in the cells pretreated with catalase (1000 U/ml) or GlcN followed by $H_2O_2$ treatment compared to not pretreated cells. GlcN alone did affect cell viability and cell morphology. Reduction in ROS level in the presence of GlcN was similar to catalase pretreated samples.

Conclusions These results indicate that GlcN attenuates ROS-induced CCL18 mRNA. GlcN modulates post-translational protein modifications such as protein O-GlcNAC glycosylation which has been shown to limit inflammation. CCL18 is a secreted proteins and these data suggests that alveolar epithelial cells under external injurious stimuli undergo an extracellular inflammatory signaling by secreting inflammatory mediators in this study CCL18 and influencing extracellular environment.

Purpose of Study Alcohol use disorders (AUD) significantly impair lung immunity and increase the risks of bacterial pneumonia and tuberculosis (TB). The mechanism by which alcohol ingestion increases TB risk is unknown. We previously determined that AUD impair nuclear factor erythroid 2-related factor 2 (Nrf2), a transcription factor responsible for antioxidant defenses and innate immunity in the alveolar macrophage (AM), thereby rendering the lung vulnerable to pneumonia and acute lung injury. We sought to determine the deleterious effects of alcohol on anti-TB effector functions in the AM, and whether activation of Nrf2 could mitigate them.

Methods Used AMs of alcohol-fed rats and their control-fed littermates were isolated by lung lavage and exposed to Mycobacterium tuberculosis (Mt$b$) ex vivo at an MOI of 10:1 for 24 h prior to assessment of gene expression of TNFα, iNOS, IL-1β, and IL-6, and IL-12 by PCR. In parallel, a rat AM cell line (NR8383) was exposed ± 72 h 60 mM alcohol, 48 h of sulforaphane (10 nM SFN, a potent Nrf2 activator), and 24 h Mt$b$ at an MOI of 10:1 prior to assessment of the same factors by PCR.

Summary of Results Gene expression of innate immune effectors (TNFα, iNOS, IL-1β, IL-6) were significantly increased from baseline in response to Mt$b$ exposure in both models.
However, these factors did not rise appropriately in response to Mtb in AMs from alcohol-fed rats. After treatment with SFN, these effectors’ gene expression was restored in alcohol-exposed NR8383 cells. IL-12, a critical cytokine for adaptive immune activation, also showed an increase in response to Mtb with a blunted rise in alcohol-fed rat AM. Treatment with SFN restored IL-12 gene expression in alcohol-exposed NR8383 cells.

Conclusions Chronic alcohol exposure impairs AM innate immunity and adaptive immune activation in response to Mtb and Nrf2 activation restores both functions, suggesting a role for antioxidant defenses in future host-directed therapies. Future studies will determine whether Nrf2 impairment in chronic alcohol exposure leads to the observed defects and apply these pathways in human subjects.

**Abstracts**

### #492 ACCELERATED AGING PATHWAYS ARE ACTIVATED IN CYSTIC FIBROSIS AIRWAY DISEASE

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**Purpose of Study** Cystic Fibrosis (CF) is one of the most common single gene disorders that affects multiple organ systems. CF is characterized by thick sticky mucus that plugs airways and leads to persistent bacterial infections and chronic inflammation. CF was once a disease of childhood; however, advances in management and care has led to an increase in survival with aging processes potentially contributing to disease progression. We have previously shown that Fibroblast Growth Factor-23 (FGF23)/klotho signaling plays a role in CF-associated airway disease. FGF23 plasma levels are elevated in CF patients. Additionally, we have shown that increased levels of circulating klotho downregulated two key pro-inflammatory markers in CF, interleukin (IL)-8 and transforming growth factor β (TGFβ) in the bronchial epithelium. Since chronic inflammation is a hallmark of both aging and cystic fibrosis airway disease, CF potentially is a disease of accelerated aging. The underlying pathways through which FGF23 and Klotho signals in CF are still unclear. Therefore, we hypothesize that the FGF23/Klotho signaling pathway contributes to accelerated aging processes in CF.

**Methods Used** To test our hypothesis, we employed an in vivo model using the adult CFTR knockout rat (C/CFtr−/−) and an in vitro model using primary bronchial epithelial cells from CF and non-CF control donors, cultured and differentiated at the air liquid interface. In addition, we used quantitative real-time PCR and western blot to assess levels and regulation of FGF receptors and cell senescence markers.

**Summary of Results** Our results showed that lungs from C/CFtr−/− rats have increased FGF receptor 4 (FGF4) mRNA and protein levels. Additionally, mRNA levels of the aging markers p16, p21 and bcl2 were increased in C/CFtr−/− rat lungs, when compared to wild type controls. In vitro analysis revealed that there was a significant increase in p16 and p21 protein levels in CF bronchial epithelial cells compared to controls.

**Conclusions** In summary, these results suggest that FGF23 signaling seems to regulate chronic inflammation in the CF bronchial epithelium but also cell senescence and apoptotic resistance. These findings warrant further investigation and could provide a potential and attractive future therapeutic strategy targeting accelerated aging in cystic fibrosis.

**#493 THE EFFICACY OF INTRATHECAL NUSINERSEN ON THE ABILITY TO WEAN FROM MECHANICAL VENTILATION IN PATIENTS WITH SMA TYPE 1**

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10.1136/jim-2022-SRMC.497

**Purpose of Study** Spinal muscular atrophy (SMA), an autosomal recessive neurodegenerative disorder, is caused by biallelic loss of function of the survival motor neuron 1 (SMN1) gene. Insufficient levels of the survival motor neuron (SMN) protein result in loss of motor neurons of the brainstem and spinal cord, progressive muscular atrophy, and weakness. The molecular basis of SMA in more than 95% of patients is homozygous deletions or mutations within the survival motor neuron 1 (SMN1) gene.

The SMA type 1 (SMA1) phenotype is the most severe and accounts for 60% of SMA patients. The onset of symptoms for SMA1 occurs shortly after birth and prior to six months of age with a clinical hallmark of the inability to achieve independent sitting. Infants with SMA1 rapidly lose motor function and may ultimately succumb to respiratory complications often within the first year of life.

In December 2016, the FDA approved nusinersen, the first drug approved to treat all ages of patients with SMA. Nusinersen is an antisense oligonucleotide drug that modifies pre-messenger RNA splicing of the SMN2 gene and thus promotes increased production of full-length SMN protein. The medication is given intrathecally and after 4 loading doses in the first 2 months the schedule calls for a dose every 4 months.

**Objective** This study aims to determine the ability of nusinersen to allow the weaning of mechanical ventilation in ventilator dependent patients with SMA type 1.

**Methods Used** Methods: This study is a retrospective and prospective, single center longitudinal study. 11 patients were chosen based on the following inclusion criteria. Genetically confirmed SMA-1, with homozygous deletion of Exon 7, who are dependent on mechanical ventilation, and receiving intrathecal nusinersen as part of their routine care. The patients initial date of mechanical ventilation was collected to establish baseline. All standard ventilator settings were recorded including hours per day that mechanical ventilation was required.

**Summary of Results**

**Results/Conclusion** The study showed that 5 of the 11 patients were able to wean ventilatory support as determined by time spent off the ventilator. When the group that were able to wean ventilation was analyzed against the group that was unable to wean, it was shown that the most important factor was the age of the patient at first injection. When the age at first injection vs ability to wean or not wean ventilator support was analyzed via a t-test of the means it showed statistical significance with p-value of 0.023. The mean age of the group able to wean was 25 months as opposed to 95 months in the group that was unable to wean. This date is promising in that nusinersen can have effect on the ability to wean.
ventilatory support in patients with SMA type 1, and emphasizes the importance of early diagnosis as this could effect the ultimate efficacy of treatment.

### #494 CYSTIC FIBROSIS FITNESS DURING INPATIENT TREATMENT

**Purpose of Study** Cystic Fibrosis (CF) is a progressive, genetic disease that affects over 30,000 individuals across the nation and results in decreased functionality of the lungs. Physical activity has a positive impact on the symptoms of CF and works to slow the decline in lung function. Additionally, activities with moderate intensity have been shown to improve sputum expectoration and oxygen saturation in children with CF. This study assessed whether using fitness trackers and providing a daily step goal would increase physical activity in hospitalized children and young adults with CF.

**Methods Used** This prospective study included participants 6–21 years of age who were admitted to the hospital for a pulmonary exacerbation of CF between October 2020-May 2021. Study enrollment occurred no more than 48 hours after hospital admission. Garmin vivosmart® 4 wrist-based activity trackers were issued and baseline data were tracked and analyzed for the first 2 study days. Pre-goal steps were defined as the average of steps taken on those 2 days. On study day 3, a step goal and menu of activities designed to increase physical activity were shared with the participant. Steps after goal setting were defined as the average of steps taken on study day 3 and beyond, excluding day of discharge. Data were collected from the electronic medical record and the activity tracker web-based profile and included the following: daily oxygen requirement, daily step count, sleep duration, overnight pulse oximetry levels, resting heart rate, calories expended, and intensity minutes. The primary outcome of change in daily steps and attainment of step goals was analyzed using descriptive statistical testing, means and standard deviations.

**Summary of Results** Six patients, aged 6–18 years, completed the study. Mean baseline FEV1 for study participants was 66% predicted (range 38 to 92%). Hospital length of stay ranged from 4–14 days. Participants took an average of 1772 ± 1011 steps before goal setting. This increased to an average of 3741 ± 1780 steps after goal setting. Overall, step goals were met 52% (Range 0–100%) of the time.

**Conclusions** This intervention shows promise, as daily steps doubled from baseline during the intervention period. There was great variability among the participants, suggesting the device may help some people much more than others. Enrollment was initially planned for 20 patients; however, the SARS-CoV-2 pandemic and consequent changes to CF therapy drastically reduced hospitalizations during the study period. Though our results show a positive impact of increased physical activity following goal implementation, further research is needed to determine the effect such an intervention would have on a larger scale. Future directions of research include having a larger sample size, conducting a multi-center study to increase population diversity, and implementing a longer follow-up period to better assess long term benefits of intervention.

### #495 POST-IMMUNIZATION MULTISYSTEMIC INFLAMMATORY RESPONSE IN NON-COVID PATIENT

**Case Report** Moderna vaccine postvaccination symptoms include local and systemic reactions. Local side effects include pain after injection, erythema, induration, tenderness, and lymphadenopathy. Systemic reactions include fever, headache, fatigue, myalgia, arthralgia, nausea/vomiting, or chills. We describe a case of severe postvaccination symptoms that occurred after administration of Moderna vaccine in an individual with no prior history of COVID infection.

**Case** 73-year-old male with a past medical history of diabetes, atrial fibrillation, hypertension, and hyperlipidemia presented to the Emergency Department secondary to an elevated white blood cell count (WBC). Patient started with weakness, low appetite, fever, chills, and headaches 2 days after receiving the Moderna vaccine. COVID-19 antigen and PCR test were negative. He was hemodynamically stable and afebrile. Laboratory showed WBC of 35.16 K/µL, sodium of 120 mmol/L, alanine transaminase of 84 IU/L, and aspartate transaminase of 116 IU/L. The patient denied having unintentional weight loss, fever, adenopathy, rash, pruritus, new medications, or recent infection.

Chest x-ray did not show pleural effusion, consolidation or pneumothorax. Patient was started on broad spectrum antibiotics, and on hypertonic saline, fluid restriction and desmopressin for severe hyponatremia. Liver ultrasound ruled out cirrhosis; his hepatitis panel was negative. Peripheral blood smear showed normocytic anemia, neutrophilia, monocytosis, lymphopenia, and thrombocytosis. Workup for myeloproliferative process including Jak2, CALR, MPL, BCR-ABL was negative. No bone marrow biopsy was performed as the smear results were considered a reactive process. Blood and urine cultures were negative.

The patient was briefly transferred to ICU secondary to worsening hyponatremia, decreased mental status, and acute kidney injury (AKI). He developed erythematous non-pruritic rash on his arms and upper chest on day 13 which resolved after oral antihistamines. Transaminases, hyponatremia, and AKI resolved, and patient was discharged 18 days later with WBC of 14.42 K/µL.

**Discussion** Post-immunization side effects have been widely described after COVID vaccination. A new entity called adult multisystem inflammatory syndrome (MIS-A) which includes some of those symptoms has been described. Diagnostic criteria include severe illness requiring hospitalization in a person ≥ 21 years, positive COVID test during admission or in the previous 12 weeks, extrapulmonary organ system dysfunction, severe inflammation on laboratory test, and absence of severe respiratory illness. Our patient had characteristics consistent with MIS-A, except for negative COVID test.
Abstracts

To our knowledge, there is only one reported case of multisystemic inflammatory syndrome associated with vaccine. Although MIS-A criteria establish that a patient must have a positive COVID test, it is worthwhile examining if there is any role of the vaccination per se on its presentation.

Renal, electrolyte and hypertension I
Concurrent session
2:00 PM
Friday, February 11, 2022

RACIAL AND ETHNIC MORTALITY DISPARITIES IN PEDIATRIC ICU PATIENTS

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Purpose of Study Despite advancements in pediatric medical care, numerous studies and summary reports reveal significantly higher rates of morbidity and mortality among pediatric patients of color when compared to white patients. Conflicting data exists in the pediatric critical care literature regarding the presence of these disparities in the PICU setting. One national study of patients with cancer revealed higher mortality rates for Black patients in the South and Hispanic patients in the West even after controlling for severity of illness. Another national study including all PICU diagnoses showed no difference in mortality between different racial and ethnic groups but regional differences were not analyzed. Our study seeks to determine if race and/or ethnicity influences mortality rates at a tertiary care PICU in the South.

Methods Used Data was analyzed from patients admitted to our PICU between 3/15–12/20. Patients whose care was transferred to another ICU were excluded from the final analysis. Demographic data as well as Pediatric Index of Mortality 3 (PIM 3) scores, Pediatric Risk of Mortality 3 (PRISM 3) scores, diagnosis category, and unadjusted PICU mortality rate were collected. Logistic regression models were utilized to identify mortality risk differences among groups when adjusting for illness severity.

Summary of Results 3,768 total patients were included in the analysis. There were 114 total deaths observed with a 2.1% mortality rate. The sample was 47% female and 53% male. Patient racial demographics were 52% Black or African American, 42% White, and 6% other races. Patient ethnicities were 6% Hispanic or Latino and 94% Non-Hispanic or Latino. There was no significant correlation between race or ethnicity and expected mortality. There were also no significant racial or ethnic differences in average illness severity as measured by PIM3 and PRISM3 scores. After adjusting for illness severity, the odds of mortality was significantly higher in Hispanic patients when compared to Non-Hispanic patients (PIM3: OR = 2.61; 95% CI, 1.26–5.42, p=0.01), (PRISM3: OR=1.28; 95% CI 1.24–1.32, p=0.004). African American race did not increase the odds of mortality when compared to White patients after adjusting for illness severity.

Conclusions Our data showed no significant racial differences in expected mortality or severity of illness adjusted odds of mortality; however, there was significantly higher odds of mortality among Hispanic patients as compared to Non-Hispanic patients when adjusting for illness severity. While the sample size of Hispanic patients is small (329) this disparity is an essential finding that necessitates further investigation.

EFFECT OF CROSSTALK BETWEEN THE ADRENAL AND KIDNEY CLOCKS ON ALDOSTERONE AND RENAL EXCRETORY FUNCTION

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Purpose of Study It is well documented that most physiological functions, including hormone secretion, renal electrolyte excretion, and blood pressure (BP), exhibit circadian rhythms. The adrenal gland is responsible for the synthesis of hormones, cortisol (corticosterone in rodents) and aldosterone, which exert a powerful influence on BP rhythm and renal electrolyte handling. Disruption in these rhythms is associated with adverse cardiorenal outcomes. BMAL1 is a core circadian clock protein. Global BMAL1 knockout (KO) male mice exert lower and non-dipping BP which is associated with inappropriate renal sodium (Na) retention (Zhang et al.). Kidney-specific BMAL1 KO male mice displayed lower BP, but BP and renal Na excretion rhythm remained intact. With kidney BMAL1 not playing a role in this phenotype and unpublished data from our lab suggesting crosstalk between the adrenal gland and kidney clock, we hypothesized a role for adrenal BMAL1 in maintenance of aldosterone and renal Na excretion rhythm.

Methods Used To test this, adrenal-specific aldosterone synthase Cre positive (AS)-BMAL1 KO mice and Cre negative control mice were generated, and the efficiency of KO was evaluated using immunohistochemistry. AS-BMAL1 male mice and littermate controls were placed in metabolic cages to assess urinary 12 h aldosterone excretion and renal Na and potassium (K) rhythm during normal Na diet and 7 days Na depletion (n=5–6).

Summary of Results Here, we show that efficiency of KO of adrenal BMAL1 was >80%, localized to the zona glomerulosa (ZG). Urinary aldosterone levels were increased with blunted rhythm in AS-BMAL1 KO male mice under normal salt and low salt conditions compared with controls (p<0.05). Na balance was calculated, showing a trend for a significant interaction between genotype and time (p=0.05), appearing more positive during their inactive period. K levels were not manipulated in the diet but with increased aldosterone and a trend for a more positive Na balance, we hypothesized increased K excretion. There was no significant difference in K excretion in AS-BMAL1 KO mice under normal Na or 7 days low Na conditions. However, when assessing cumulative K excretion, AS-BMAL1 KO mice excreted more K over the course of the treatment (p<0.01), consistent with increased aldosterone levels.

Conclusions Consistent with our hypothesis, loss of the core clock protein BMAL1 in the ZG of the adrenal gland resulted in blunted night/day aldosterone levels and disturbance in renal electrolyte handling. Others have shown that the adrenal
clock is necessary for proper regulation of corticosterone but the role of the adrenal clock in the regulation of aldosterone and renal function remains unknown. This work is the first to investigate the role of adrenal BMAL1 on aldosterone regulation and renal function, suggesting a link between the adrenal clock and the kidney. Future studies will assess whether BP rhythm in AS-BMAL1 KO mice is disrupted and determine if there are sex-specific differences in the role of adrenal BMAL1.

### #499 ASSESSMENT OF SCINDERIN AND DDAH2 AS A CORRELATE OF MUDY BROWN GRANULAR CASTS AND MARKERS OF ACUTE TUBULAR INJURY

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**Purpose of Study** Muddy Brown Granular casts (MBGC) are present in the urine of patients with acute kidney injury (AKI) and are pathognomonic for acute tubular necrosis (ATN). Identification of MBG Cs requires microscopic inspection of the urine, which is both time consuming and requires a trained professional. A preliminary proteomic analysis found 242 proteins were elevated in MBGC enriched sediment compared to urine supernatant, two of which were Scinderin (SCIN) and dimethylarginine dimethyl-amino-hydrolase 2 (DDAH2). The purpose of this study was to determine if SCIN and DDAH2 correlate with MBGC abundance in whole urinary sediment from patients with ATN.

**Methods Used** Urine sediment from patients (n=16) hospitalized with AKI and suspected ATN were collected and stored at -80C. Patients were 40% Black, 60% White; 88% male; with a median age 62 [range: 20–79] years. Median serum creatinine at the time of urine collection was 3.5 [range: 1.9–5.1] mg/dL. Sediment was lysed in SDS buffer and 13ug of total protein was used for semi-quantitative western blotting. Immunoaffinity was detected using a Li-Cor imager with Image Studio software and normalized to total protein transferred to the membrane. Immunoaffinity signal was quantified in the region containing the predicted molecular weight and also the full lane to capture proteolytic degradation products. Signal intensity was correlated with percent MBGCs per low powered field (%MBGC/LPF) and maximum MBGCs per LPF (maxMBGC/LPF) using Spearman-Rank correlation.

**Summary of Results** Positive immunoaffinity for SCIN was observed at 80 kDa in 12 specimens (75%). No significant relationship was detected between SCIN vs%MBGC/LPF (r=0.19, P=0.4) or MBGC/max (r=0.25, P=0.3). Positive immunoaffinity for SCIN was observed in the full lane SCIN in 15 patients. No significant relationship was detected between SCIN full lane vs%MBGC/LPF (r=0.23, P=0.4) or maxMBGC/LPF (r=0.27, P=0.3). Positive immunoaffinity was observed at 29 kDa (DDAH2) in 14 specimens (88%). No significant relationship was detected between DDAH2 vs MBGC/LPF (r=0.01, P=0.9) or MBGC/max (r=0.02, P=0.9). Positive immunoaffinity was observed in the full lane DDAH2 in 16 patients. No significant relationship was detected between DDAH2 full lane vs MBGC/LPF (r=0.13, P=0.6) or MBGC/max (r=0.25, P=0.3). However, SCIN signal intensity above the 20th percentile was able to identify 100% of patients with greater than 0.3 MBGC per LPF or 5 MBGC per LPF. **Conclusions** SCIN or DDAH2 were detected in a majority of sediments containing MBG Cs. Neither protein correlated with MBGC abundance; however, high levels of SCIN was able to discriminate between patients with low versus high MBGC load.

### #500 EVENT RATES AND RISK FACTORS FOR INTRACRANIAL AND GI BLEEDS DURING DIALYSIS PATIENTS ON P2Y12 INHIBITORS

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**Purpose of Study** Patients with end stage kidney disease on chronic dialysis (ESKD) experience a 2–5-fold higher risk of intracranial bleeds, and carry a 4–10-fold higher risk of dying from such bleeds compared with the general population. This risk of bleeding may worsen with use of antiplatelet drugs (e.g., P2Y12 inhibitors, clopidogrel, prasugrel and ticagrelor) that are frequently initiated for underlying high prevalence of cardiovascular diseases. We investigated factors that could predict the risk of intracranial bleeds in ESKD patients receiving P2Y12 inhibitors.

**Methods Used** Using the US Renal Data System registry, we developed a national cohort of ESKD patients receiving chronic dialysis who were new users of P2Y12-IIs between 2011 and 2015. The exposure variable was the receipt of prescription and the outcome variable was the time-to-first intracranial bleed. We identified covariates 6-months prior to the index dates of the prescriptions. Cox proportional hazard models were constructed to identify clinical risk factors associated with intracranial bleeds in this patient population.

**Summary of Results** Of the 40,972 patients in the final cohort which was followed for a median of one year, the median age was 64.0 years. There were 1,298 (3.2%) intracranial bleeding events. In the entire cohort, a history of previous ischemic stroke was the strongest independent predictor of intracranial bleeding, HR 2.74; 95% CI: 2.42–3.11. A similar association was observed in the subgroup who received clopidogrel only, HR 2.76; 95% CI: 2.43–3.13. Among other covariates, age and the presence of diabetes mellitus were also noted to be associated with intracranial bleeds. **Conclusions** Our findings suggest using great caution while administering P2Y12-IIs in ESKD patients with previous history of ischemic stroke. This is particularly relevant when there is no black box warning for its use in this high-risk patient population. Most of these patients were systematically excluded from the landmark P2Y12-I clinical trials. Our findings also underline the urgency in conducting P2Y12-I trials in this patient population in order to investigate the benefits and risks of their use.
ADDITION OF HIGH-DOSE FUROSEMIDE TO NOREPINEPHRINE DURING TREATMENT OF HEPATORENAL SYNDROME TYPE 1 AUGMENTS DIURESIS AND DOES NOT HALT KIDNEY FUNCTION RECOVERY

10.1136/jim-2022-SRMC.504

Purpose of Study Withdrawal of diuretics is recommended as a first intervention in patients with cirrhosis who present with acute kidney injury (AKI) to eliminate prerenal factors. Moreover, diuretics are considered potential trigger for hepatorenal syndrome type 1 (HRS-1). As a result, diuretics are rarely utilized once the diagnosis of HRS-1 is made due to concerns for aggravating the clinical course. We hypothesized that after a prerenal state is ruled out and HRS-1 is diagnosed and properly treated with a vasoconstrictor, i.e., the mean arterial pressure (MAP) is effectively raised, use of diuretics is safe and effective.

Methods Used We search records of patients hospitalized at Ochsner Medical Center over a 3 year period who received intravenous (IV) furosemide (FURO) while receiving IV norepinephrine (NE) as a vasoconstrictor specifically for treatment of AKI due to HRS-1. We assessed the change in urine output (UOP) and the trajectory of serum creatinine (sCr) values before and after the initiation of NE and before and after the addition of FURO.

Summary of Results A total of 19 patients with HRS-1 received IV FURO [median duration: 2 (1–8) days; median dose: 160 (80–240) mg boluses q6–24 h] added to IV NE during the study period. Median age was 52 (31–69) years; 89% white race, 53% women, median MELD score 32 (22–41). At the time of initiation of FURO, median sCr was 3.8 (1.7–7.9) mg/dL. Before initiation of any therapy, the median UOP was 275 (10–695) ml/day. NE alone led to a median increase in UOP to 530 (200–2150) ml/day (p=0.013). Addition of FURO to NE induced a subsequent increase in median UOP to 2045 ml/day (p<0.0001), i.e., median gain in UOP of 1605 ml/day. Seventeen (79%) patients treated with NE+FURO [w/median MAP rise 15 (11–24) mmHg] either maintained or improved the sCr trajectory consistent with kidney recovery and not needing dialysis. The magnitude of NE-induced rise in MAP significantly correlated with the average achieved during the days of combined NE+FURO therapy (R=0.48, p=0.03).

Conclusions In patients with HRS-1 who are adequately treated with NE and achieved an optimal MAP increment, addition of high-dose IV FURO enhances diuresis without negatively affecting recovery of kidney function.

COVID-19 OUTCOMES IN RENAL TRANSPLANT PATIENTS – A SINGLE-CENTER CASE SERIES

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Purpose of Study Initially detected in Wuhan, China, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), which is responsible for coronavirus disease 2019 (COVID-19) rapidly became a global pandemic. Immunocompromised patients, including kidney transplant recipients, are at increased risk of morbidity and mortality but granular data from transplant centers such as ours serving a majority- minority and rural population are still scant. We aim to describe the impact of COVID-19 in our unique cohort of transplant patients.

Methods Used During the pandemic, all transplant patients followed up at our center with reported COVID-19 were included in a registry. A case series of 136 patients drawn from this registry were included in this preliminary analysis spanning the period of March 2020 to March 2021. Statistical analysis was performed with R.

Summary of Results The characteristics of our patients were: 54% male, 53% Black, 40% White, Median age 53 years, Median BMI 31, 47% were diabetic, 96% had hypertension, 16% had coronary artery disease. Median time after transplantation was 6.2 years (range 4 days to 37 years), 61% had thromboglobulin induction and almost uniformly were on tacrolimus, mycophenolate and prednisone. Baseline median creatinine 1.3 mg/dl and urine protein to creatinine ratio 0.18 g/g.

The most commonly reported symptoms were fever (51%) dyspnea (48%), fatigue (46%) and myalgia (31%). 49% were hospitalized of whom half required ICU care. 82% of ICU patients were on ventilator support. 45% of patients had AKI, 7% required dialysis, 35% of patients required oxygen. There were 6 graft losses (4%) and 26 deaths (19%). Immunosuppression was reduced in most patients with antimitabolite reduction in 54%, and calcineurin inhibitor reduction in 44%. Treatments included dexamethasone (31%), and remdesivir (21%), convalescent plasma (6%), and monoclonal antibodies (4%).

Corticosteroids and proteinuria post-COVID remained stable (1.4 mg/dl and 0.17 g/g respectively). 118 patients were followed up in clinical post-COVID and of these 15% reported continued severe COVID symptoms.

On univariate analysis, age, race, gender, ABO blood type, diabetes status, cardiovascular disease, induction, time from transplant, baseline creatinine, proteinuria, baseline immunosuppression regimen, ACEi or ARB use, and reported symptoms (except for dyspnea) were not associated with risk of death. On multivariate analysis, ICU admission and need for dialysis were strongly predictive of death.

Conclusions Despite serving a large rural population with a high burden of comorbidities, patient outcomes following COVID infection from our study are similar to other single-center and multi-center reports. As expected, the mortality rate in our cohort is much higher than the general population with high rates of hospitalization and need for ICU care. Aside from a significant minority, most patients recovered well and had stable renal allograft function. Our study is limited by its retrospective nature and risk of reporting bias.

PREVENTING PROCEDURE-ASSOCIATED PERITONITIS IN PERITONEAL DIALYSIS

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Purpose of Study Peritonitis is a major cause of peritoneal dialysis (PD) modality failure. In 2016 to 2017, we experienced 3 cases of procedure-associated peritonitis at Emory Dialysis (2 – intrauterine device and 1 – colonoscopy). Guidelines for
Pre-procedure care of PD patients include antibiotic prophylaxis that requires IV administration, which is difficult for outpatient practice. Our goal is to develop a pre-procedure antibiotic protocol that is convenient and safely protects against procedure-associated peritonitis in PD patients at Emory Dialysis.

Methods Used We examined baseline clinical data, reviewed medical literature, and derived a pre-procedure antibiotics protocol for PD patients. The protocol included administration of either oral, intraperitoneal antibiotics or both for gastrointestinal, dental and gynecologic procedures. The quality improvement project interventions included education of patients and staff, and creating a system to identify patients having procedures.

Summary of Results A total of 84 procedures (21-colonoscopies, 13-endoscopies, 40-dental procedures, 3-IUD, 7-others) over a period of 36 months. 2 patients didn’t receive antibiotic prophylaxis and one of those patients developed peritonitis.

Conclusions The pre-procedure antibiotics protocol is self-administered by the patient and a successful approach in prevention of procedure-associated peritonitis. The QI project was also found to be efficient in implementation (only 2 patients not receiving antibiotics). The protocol has been effective so far with all patients receiving prophylactic antibiotics not developing peritonitis.

## Abstract #504

### PHENOTYPING PRERENAL AND INTRARENAL ACUTE KIDNEY INJURY BY URINE MASS SPECTROMETRY

**LT James*, RB Mitchell, C Herzog, JH Holthoff, J Arthur. University of Arkansas for Medical Sciences College of Medicine, Little Rock, AR**

10.1136/jim-2022-SRMC.507

**Purpose of Study** Postrenal causes of acute kidney injury (AKI) can generally be determined by imaging but differentiation of prerenal (PR) from intrinsic renal (IR) can be more difficult. A point of care test to quickly differentiate these two entities would be useful. Mass spectrometry (MS) can visualize small molecules in urine. We utilized a portable, single quadrupole mass spectrometer with a simple atmospheric pressure ionization interface to measure small molecules in urine. The interface allows for direct analysis of samples without the need for chromatography or other time-consuming sample preparation. The goal was to distinguish PR and IR AKI by urine analyte profiles.

**Methods Used** Inpatients that developed AKI were eligible for enrollment. Patients with COVID-19 were excluded. Informed consent was obtained under a protocol approved by the UAMS IRB. Patients were categorized as either PR (n=9) or IR (n=7) AKI etiology using the diagnosis by the on-service nephrology attending. Etiologies for IR AKI included tumor lysis syndrome, contrast-induced nephropathy, myeloma light chain disease, pyleonephritis, and cisplatin-induced kidney injury. Two microliters of urine was dispensed onto a stainless steel probe without prior processing and analyzed by MS with an Advion Expression CMS Mass Spectrometer. Peaks within the 20 to 500 m/z range were recorded. MS spectra were processed and binned in 1 m/z increments for peak clustering using MATLAB. The frequency of binned peaks in the PR AKI group were compared to the IR group and marked as peaks of interest if the difference in number of peaks across the two categories was four or more. Missing peak values were replaced with the minimum value for that peak across all samples.

**Summary of Results** Eleven peaks met our initial criteria for difference in frequency between intrinsic and prerenal cases. From the eleven, the mean intensity was different between the groups for only the sample at m/z 242 (p=0.03). In the PR group, mean and SD of the peak intensities were 1.7E+07 ± 1.2E+07 compared to 7.0E+06 ± 7.7E+06. Using a cut-off value of 1.5SE+07, overall accuracy was 75%. The predictor correctly classified 6/9 in the PR group (67%) and 6/7 in the IR group (86%).

**Conclusions** Point of care MS has the potential to rapidly differentiate PR from IR and potentially to further phenotype causes of AKI. Based on previous studies, the peaks we identified are likely small molecule metabolites. Larger sample size will be needed to better phenotype patients and will enable the use of machine learning algorithms to classify the kidney disease that is present. Further correlation of the different analytes in prerenal and intrarenal AKIs is needed, however this study shows the potential utility of mass spectrometry to rapidly phenotype AKI in the clinical setting.

## Abstract #505

### ARE UNDERGRADUATES FAMILIAR WITH NEPHROLOGY AS A MEDICAL SPECIALTY? – A SINGLE SITE SURVEY OF COLLEGE STUDENTS

**1JM Hopkins*, 1J Arthur, 1J Velez, 1MG Janeech. 1College of Charleston, Charleston, SC; 2University of Arkansas for Medical Sciences, Little Rock, AR; 3Ochsner Medical Center – New Orleans, New Orleans, LA**

10.1136/jim-2022-SRMC.508

**Purpose of Study** Over the past decade, Nephrology has experienced a 43% decline in fellowship applicants. One factor in the low selection of Nephrology as a career could be a lack of early exposure. While numerous studies have been conducted to determine why residents choose a specific fellowship program, none have surveyed the undergraduate student population to inquire whether the name ‘Nephrology’ was even a recognizable medical specialty. To this end, we conducted a survey to test the hypotheses that Nephrology will rank amongst the least recognizable specialties and that early career recognition correlates with application to position ranking.
Methods Used 274 undergraduates at the College of Charleston, a public liberal arts and sciences university located in Charleston, SC, responded to a Qualtrics survey where they were asked to select every medical specialty they recognized by name (15 real specialties/1 fictitious). Demographics including sex, race/ethnicity, collegiate level, high school location, pre-med track, and household income were included. Data were manually inspected for duplicate responses. Differences were determined by comparing confidence intervals or chi-square test. Correlation between the number of applicants per specialty fellowship position (year 2019 or 2020) and the proportion of positive responses was assessed by the Spearman-Rank test.

Summary of Results Out of 15 medical specialties, Nephrology ranked as the least known (29%), although Pulmonology (40%) was not statistically different from Nephrology. Pediatrics (97%) and Surgery (97%) ranked highest. Sex, race, collegiate level, and household income were not different between those students that recognized the word ‘Nephrology’ versus those that did not. Pre-med students were about twice as likely (p<0.001) to recognize Nephrology versus non-pre-med students (49% vs. 22%, respectively). STEM majors were about twice as likely to identify ‘Nephrology’ versus non-STEM majors (40% vs. 20%, respectively). There was no correlation between the proportion of undergraduate students who recognized a specific medical specialty and the number of applicants per fellowship position in 2019 (r=0.2, p=0.7).

Conclusions Nephrology was one of the least recognized, non-fictional, specialties amongst undergraduates. We reject the second hypothesis due to the lack of correlation between student responses and fellowship applications per position. These data suggest that name recognition alone, at the undergraduate level, is not associated with the distribution of fellowship applications. The discrepancy between Nephrology and other specialties highlights a gap in name recognition at an early career stage, even amongst premedical students.

Cardiovascular II
11:00 AM
Saturday, February 12, 2022

#506 OUTPATIENT ORAL CORTICOSTEROID STRATEGY FOR NON-FULMINANT MYOCARDITIS ASSOCIATED WITH COVID-19
A Rathore*, O Mgbenema, F Rollini. University of Florida Health Science Center Jacksonville, Jacksonville, FL

10.1136/jim-2022-SRMC.509

Case Report
Case presentation A 36-year-old with recent vaginal delivery, cocaine abuse, and COVID-19 infection was admitted for new acute systolic heart failure. Etiology of heart failure was suspected as peripartum cardiomyopathy, cocaine-induced, or COVID myocarditis. EKG had no ischemic changes and echocardiography revealed an ejection fraction (EF) of 10–15% with severe global hypokinesis. Additional diagnostics showed a BNP of 3600 and a stable high-sensitivity troponin with a negative delta of 60–65. No arrhythmia on telemetry noted as well. Cardiac MRI was suggestive of myocarditis and no evidence of ischemia on stress MRI (figure 1). The patient received diuresis until euvolemia and tolerated lisinopril and carvedilol. With a diagnosis of clinically suspected non-fulminant COVID myocarditis, she was discharged on a tapered oral dexamethasone for two weeks. On a follow-up telemedicine encounter, the patient denied any chest pain, shortness of breath, and was otherwise asymptomatic.

Discussion Currently, there remain no guidelines of treatment for COVID-19 myocarditis. Many published management strategies are focused on use of IV corticosteroids and other immunosuppression for cases of fulminant myocarditis. However, there is limited data on outpatient management of non-fulminant myocarditis associated with COVID-19. In our case report, we demonstrate successfully managing a patient with non-fulminant myocarditis in the setting of severely reduced EF with an outpatient steroid regimen. Of note, her systolic dysfunction was not exclusively from myocarditis as the patient also had a history of cocaine abuse and possible peripartum cardiomyopathy. At the time of hospital discharge, she was clinically stable, euvolemic, tolerated guideline-directed medical therapy, and her troponins suggested no on-going myocardial injury.

#507 SPONTANEOUS CORONARY ARTERY DISSECTION AND MARIJUANA USE
1OH Al-Jobory*, 1Y Tawfeeq, 1I Mohammed, 1M Saadaldin. 1Texas Tech University Health Sciences Center, Amarillo, TX; 2Northwest Technical Education Center, Amarillo, TX

10.1136/jim-2022-SRMC.510

Case Report SCAD used to consider rare but it been diagnose more recently as angiogram uses increased, though still consider uncommon. It found to be more in young female than male, present usually as chest pain or pericardial effusion. Etiology unknown most likely idiopathic or secondary to trauma.
or might be related to drug use. We are reporting a case of middle-aged man, use Marijuana daily present with chest pain diagnosed with SCAD.

Case 55y M, no PMH present with left side chest pain, heaviness in nature, not radiating associated nausea, troponin 126.6-5,5188 mg/l (critical low 78.5), lipid panel WNL, U tox positive for cannabinoid, negative for cocaine.

CXR normal, EKG: ST depression in V2,V3 and T wave inversions in AVR, AVL, V1, V2.

TTE: EF 40-45%, no LVH, no pericardial effusion. Stress test negative for ischemia.

Cardiology took the patient for heart Cath which showed dissection in the mid portion of circumflex artery. There is still good flow past the dissection. After heart cath patient had new chest pain that they have to take him again to heart cath, then they found 71% to 99% narrowing in the mid one third of the circumflex, PCI placed, chest pain resolved.

Discussion A dissection is a tear of the inner layer of the wall of the artery that lets blood get in between the layers of the wall and separate them. This causes the artery wall to bulge that might cause mild narrowing or might be long diffuse narrowing due to intraluminal hematoma.

mechanism usually related to trauma, CTD, prolong hypertension (lead to vessels stiffness) or drug use (cocaine).

Marijuana not known to cause dissection, but it works on CB1 and CB2 receptors, both receptors belong to the family of G (guanine nucleotide-binding) protein-coupled receptors, which have seven membrane-spanning regions.

CB1 and CB2 receptors are coupled to inhibitory G proteins, and their activation reduces adenylyl cyclase activity and decreases formation of cAMP which abolished relaxation of blood vessels wall lead to stiff vs. also, both receptors detected on platelet cell membrane. It has been shown in vitro that cannabis increases expression of glycoprotein IIb-IIIa and P-selectin in a concentration dependent manner which leads to platelets aggregation and Factor VII activation lead to atherosclerosis, that hardening the wall. SCAD very commonly to be miss sificantly if present without ST elevation, as it occurs more in young lady with no risk factors unless consider Marijuana abuse as a risk factor. Angiography is the best test to find CAD. Management usually with aspirin and BB but intervention with stent is still required if patient has the indication. Its very challenging to place a stent due to fragility of the vessels, the instrument can propagate the dissection.

Conclusion Young patient with chest pain and no risk factors and normal EKG always consider SCAD. We are seeing more cases of SCAD might be to more angiograph imaging use or may be related to more Marijuana use in the community between young individuals.

#508 LMNA-ASSOCIATED CARDIOMYOPATHY: DISEASE PRESENTATION AND MANAGEMENT

J Roemen*, L Joseph, J Barrios, V Bittner. The University of Alabama at Birmingham, Birmingham, AL

10.1136/jim-2022-SRMC.511

Case Report 21 year old male with a history of paroxysmal atrial fibrillation (AFIB) currently on flecainide presents after visiting an outside clinic where he was hypotensive and tachycardic, and found to be in AFIB with rapid ventricular rate after 2 weeks of palpitations. Review of systems was otherwise negative. He had no other pertinent past medical, surgical, or surgical history. Exam notable for small body mass, hypertelorism, low set ears, no lower extremity edema, and irregularly irregular rhythm with tachycardic heart rate. Workup revealed mildly elevated BNP with all other labs in normal limits. EKG showed AFIB and chest X-ray unremarkable. Further evaluation with TTE showed newly reduced ejection fraction of 23% and atrial enlargement. Cardiac MRI was suggestive of dilated non-ischemic cardiomyopathy. His AFIB was managed with bouts of metoprolol, diltiazem, digoxin, and was started on Eliquis. During admission, he had numerous runs of non-sustained ventricular tachycardia. He initially tolerated addition of an ACE-inhibitor in conjunction with a beta blocker for his newly reduced ejection fraction heart failure, but was later stopped due to hypotension. Given his syndromic appearance, young age, AFIB, and newly reduced ejection fraction, genetics was consulted for evaluation. Genetic testing showed a heterozygous mutation in the LMNA gene. Once the diagnosis of LMNA-associated cardiomyopathy was clinched, he followed up with our heart failure, electrophysiology, and genetic clinics. He then had a complicated course with multiple admissions for heart failure exacerbations and AFIB. He has since been started on a daily diuretic and required multiple cardiovascular for his AFIB. Ultimately, he went on to have an AV nodal ablation and CRT-D placement given his persistent AFIB. ICD was chosen over pacemaker in this case given his male sex placing him at high risk for ventricular arrhythmias from his LMNA cardiomyopathy. Finally, we attempted to continue managing his heart failure and atrial arrhythmias in accordance to ACC guidelines which mirror that of standard heart failure and arrhythmia management guidelines.
Higher LDL Normal Levels in Hispanics in Puerto Rico Shows a Lower Coronary Artery Disease Than the USA-Explained by Genetic Admixture

Purpose of Study
Coronary artery disease is one of the highest causes of death in the world. The purpose of this report is to demonstrate that Puerto Rico (PR.), a Hispanic country, shows a lower coronary artery disease (CAD) (20–30%) than U.S.A., even with higher LDL levels of 120 mg/dl of its population, which is normal in our population. PR. is the country of the world with the highest influence of U.S.A. culture.

Methods Used
Compare the high LDL levels with normal total cholesterol and HDL in PR. and the U.S.A. The study population was 1000 consecutive patients and the U.S.A. health statistics and PR. Department of Health of PR.

Summary of Results
Studying the lipid profile of PR. population, we found that the mean value of LDL lipoprotein is (± 105 mg/dl) with normal HDL, triglycerides and total cholesterol, and still the coronary disease incidence is lower than the U.S.A. (20–30%). Investigators from the pharmacy Department reported the genetic admixture of this population (PR.); (CYP2C9, VKORC1 and VKORC1–1639> A allele in sector 1). They reported the admixture consisted of 3 genes that we call protective against severe and aggressive C.A.D. because is homogenous in the Puertorrikan population, they will reduce the coronary inflammatory process induced by the atherosclerotic factors.

C.A.D. is an inflammatory process involving inflammation of the endothelial cells, monocytes macrophages and other cells. This inflammation probably induced by angiotensin II and oxidized LDL, induces plaques, foam cells and atherosclerosis.

Conclusions
Probably, those genes admixture protects these cells, especially genes against an aggressive inflammatory process, which will produce severe endothelial damage. Again, culture and ethnicity and evolution should be considered in the management of this inflammatory disease, seen in the reduction of our atherosclerotic disease, when we compare it with the U.S.A. mainland.

Endocrinology and metabolism
Concurrent session
1:00 PM
Saturday February 12, 2022

11-Ketotestosterone May Account for Advanced Bone Age in Wiedemann-Steiner Syndrome

Purpose of Study
We aim to further define the phenotypic spectrum of Wiedemann-Steiner Syndrome (WDSTS). We also aim to elucidate the mechanisms behind the advanced bone age that has been described in patients with WDSTS.

Methods
A retrospective chart review was performed. The control patient was selected from the pediatric endocrinology patients who had a premature adrenarche diagnosis and 11-ketotestosterone assay.

Summary of Results
The patient is a 3 year and 8-month-old, African American female who was diagnosed with WDSTS at nine months through a CGH microarray. The patient’s history is significant for poor weight gain, failure to thrive, hypotonia, patent ductus arteriosus, developmental delay, short stature, constipation, and feeding difficulties. At two years and 11 months, bone age revealed an advanced bone age of five years, in comparison to her chronological age. Causes of advanced bone age such as hyperthyroidism, central precocious puberty, and congenital adrenal hyperplasia were excluded. We obtained an 11-ketotestosterone level on this patient. Additionally, an 11-ketotestosterone level was measured in a control subject, aged 4 years and 6 months with premature adrenarche and bone age advancement (bone age 6 years and 10 months). 11-ketotestosterone in the case patient was found to be elevated at 26.3 ng/dl (normal range 7.3–10.9 ng/dl, premature adrenarche range 12.3–22.9). 11-ketotestosterone in the control patient was 6.8 ng/dl.
Conclusions The elevated 11-ketotestosterone in this patient with WSTS could explain the advanced bone age and short stature seen in patients with WSTS. To our knowledge, this is the first case report that describes the androgens formed in the backdoor pathway as a potential cause for premature bone age advancement. Further research needs to be done to understand the reasons for elevated 11-ketotestosterone in WSTS.

#511 ADRENAL HEMORRHAGE IN PREGNANCY

N Pant*, F Shashpal, A Wynn. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2022-SRMC.514

Case Report Adrenal hemorrhage (AH) is a rare condition that can lead to acute adrenal insufficiency and may be fatal. It is potentially life-threatening when the adrenal glands are involved bilaterally, although at least 90% of each adrenal cortex must be compromised before this is clinically evident. Due to the increased availability of modern imaging techniques, AH is more frequently diagnosed these days. We present an interesting case of AH in pregnancy.

Case presentation A 26-year-old G6P3023 at 28–4/7 weeks with PMH of abdominal ventral hernia, polysubstance abuse, seizure disorder, medication nonadherence, and recently treated suspected acute pylonephritis (3/25/21 – 3/29/21) presented to the hospital on 04/11/21 with nausea, vomiting, back and abdominal pain. On exam she was afebrile, tachycardiac at 115/min, BP 114/72 mm Hg and RR 18. Abdominal exam was significant for a gravid uterus and right CVA tenderness. CBC, CMP, coagulation studies were normal except for Wbc 12.7 K/µL, Hb 7.8 g/dL, Hct 24.6%, Na 133 mmol/L, K 3.4 mmol/L, Fibrinogen 629 pg/mL. She had CT abdomen and pelvis without contrast that showed interval development of bilateral adrenal hemorrhage compared to the unremarkable CT on 3/20/2021. Endocrinology was subsequently consulted for the co-management of bilateral adrenal hemorrhage. Stat cortisol and ACTH levels were ordered, and she was started on Hydrocortisone 50 mg intravenous Q8H. Cortisol level and ACTH level later resulted 22 ug/dL and 876 pg/mL respectively. She had two more MRI abdomen during the hospital stay which were consistent with stable spontaneous bilateral adrenal hemorrhages. Intravenous Hydrocortisone was weaned to oral form. She was discharged home on oral hydrocortisone 20 mg morning, 10 mg noon and 10 mg evening (30% addition to nonpregnant physiologic dose). She was discharged home with IM Solu-cortef kit for prn use with 1 week follow up in outpatient endocrinology. We also recommended stress dose of IV hydrocortisone 100 mg q8h during labor.

Conclusion AH in pregnancy is rare, presenting with nonspecific symptoms, most commonly abdominal pain, and hypotension. A high index of suspicion is needed for diagnosis, and MRI is the most sensitive and specific imaging modality. Cortisol assay and the cosyntropin stimulation test with higher peak cortisol thresholds are currently the diagnostic tests of choice. Hydrocortisone is the preferred glucocorticoid replacement in pregnancy. Dose titration may be required but should be individualized depending on clinical course and mode of delivery.

#512 DIFFERENCES IN TRANSCRIPTOMES FROM INSULITIC AND NORMAL HUMAN ISLETS OF LANKERIANS

1G Ashbery*, 1A Dye, 1N Lenchik, 2M Atkinson, 3M Campbell-Thompson, 1l Gerling. 1The University of Tennessee Health Science Center College of Medicine, Memphis, TN; 2University of Florida College of Medicine – Jacksonville, Jacksonville, Fl.

10.1136/jim-2022-SRMC.515

Purpose of Study Insulitis, defined as T-cell lymphocytic infiltration within an islet that leads to the destruction of insulin producing beta cells, does not occur to the exact same degree across all islets in the pancreas. We hypothesized that gene expression profiling of normal (Ins+CD3) vs insulitic (Ins+CD3) islets would improve understanding of this heterogeneity. In order to test this hypothesis, we conducted a direct comparison of global gene expression pathways in insulitic versus normal islets from within the same donor.

Methods Used Pancreatic tissue samples were obtained from 27 nPOD organ donors (16T1D/11AAb+; 14 M/13 F; age 5–69 years). Individual islets were collected by laser-capture microscopy and RNA was isolated to obtain transcriptome data. We studied both normal and insulitic islets from 11 donors (5 AAb+ and 6 T1D). Gene expression in individual insulitic islets were compared to the average of all normal islets from the same donor. For each insulitic islet, we created 2 lists of genes; >2-fold up and >2-fold downregulated in the insulitic islet when compared to the average value. Lists were analyzed for enrichment of specific KEGG pathway and Gene Ontologies. These pathways were used to further assign each insulitic islet two (up or down) ‘categories’: immunity, mitochondrial, metabolism, secretion, and cell signaling.

Summary of Results Most donors (7 of 11) had all 5 categories represented in either up or downregulated pathways. The most highly upregulated categories in T1D donor islets were immunity (39%) and signaling (26%) and most highly downregulated were signaling (33%) and secretion (33%). In AAb+ donor islets, the most highly upregulated categories were signaling (41%) and immunity (32%) and the most highly downregulated were signaling (27%) and metabolism (21%). When the lists of overexpressed genes in each insulitic islet from the same donor were compared, we observed that on average, each individual islet had 64.80% unique genes upregulated and 57.82% downregulated (not found in the analysis of any other insulitic islets from that same donor).

Conclusions While similar themes of categories over-expressed in insulitic compared to averaged normal islets were noted between donors, we also found that there is a large degree of heterogeneity in gene expression for each islet, within one individual donor. Moreover, in some donors, even when there was a large percentage of genes within each insulitic islet that were unique to the islet, the insulitic islets from that donor often shared the same larger categories. Our conclusions highlight the heterogeneity and potential temporal complexity of the pancreatic islet destruction leading to T1D.

#513 DETECTION OF CYSTIC FIBROSIS RELATED DIABETES THROUGH ANALYSIS OF VOICE CHARACTERISTICS IN TELEMEDICINE CLINICS

1S Weinstein*, 1Y Suppakitjanusant, 2Y Tangpricha. 1Emory University Emory College of Arts and Sciences, Atlanta, GA; 2Emory University School of Medicine, Atlanta, GA.

10.1136/jim-2022-SRMC.516

Purpose of Study To examine the feasibility of using voice characteristics to identify CF-related diabetes (CFRD). A prospective cross-sectional study was performed in a Telemedicine clinic with patients recently treated for suspected acute pyelonephritis during the ongoing COVID-19 Pandemic. We hypothesized that high blood glucose levels may cause laryngeal soft tissue swelling and lead to changes in voice characteristics.

Methods Used A computerized speech lab with the Multi-Dimensional Voice Program was used to record vocal samples and data. We studied both normal and abnormal islets from 11 donors (5 AAb+ and 6 T1D). Gene expression in individual insulitic islets were compared to the average of all normal islets from the same donor. For each isulitic islet, we created 2 lists of genes; >2-fold up and >2-fold downregulated in the insulitic islet when compared to the average value. Lists were analyzed for enrichment of specific KEGG pathway and Gene Ontologies. These pathways were used to further assign each insulitic islet two (up or down) ‘categories’: immunity, mitochondrial, metabolism, secretion, and cell signaling.

Summary of Results Most donors (7 of 11) had all 5 categories represented in either up or downregulated pathways. The most highly upregulated categories in T1D donor islets were immunity (39%) and signaling (26%) and most highly downregulated were signaling (33%) and secretion (33%). In AAb+ donor islets, the most highly upregulated categories were signaling (41%) and immunity (32%) and the most highly downregulated were signaling (27%) and metabolism (21%). When the lists of overexpressed genes in each insulitic islet from the same donor were compared, we observed that on average, each individual islet had 64.80% unique genes upregulated and 57.82% downregulated (not found in the analysis of any other insulitic islets from that same donor).

Conclusions While similar themes of categories over-expressed in insulitic compared to averaged normal islets were noted between donors, we also found that there is a large degree of heterogeneity in gene expression for each islet, within one individual donor. Moreover, in some donors, even when there was a large percentage of genes within each insulitic islet that were unique to the islet, the insulitic islets from that donor often shared the same larger categories. Our conclusions highlight the heterogeneity and potential temporal complexity of the pancreatic islet destruction leading to T1D.

Abstracts

J Investig Med. 2022;70:453–758
Purpose of Study Cystic fibrosis-related diabetes (CFRD) is one of many extrapulmonary co-morbidities associated with cystic fibrosis (CF), affecting an estimated 50% of all adults with the condition [1,2]. The standard test recommended by the CF Foundation for screening of CFRD is the oral glucose tolerance test (OGTT) [5]. Requiring a complex in-person clinic visit, the OGTT can be cumbersome to schedule, and for these reasons, may lead to a delayed diagnosis of CFRD.

We are interested in developing a novel technique to detect changes in glucose levels by analyzing characteristics of the voice, specifically a method to capture voice recordings that requires no face-to-face interaction as restricted by the ongoing COVID-19 Pandemic. We hypothesized that high blood glucose levels may cause laryngeal soft tissue swelling and lead to changes in voice characteristics.

The purpose of this study is to examine if changes in voice can distinguish patients with CFRD from patients without CFRD.

Methods Used A prospective cross-sectional study was performed in adult CF patients recruited from the CF Telemedicine Clinic at Emory Healthcare from March to September 2021. We recorded 5-second voice samples of a sustained/a/ vowel via an electronic submission form to allow patients to submit recordings directly from a link sent to their smartphone. Voice parameters listed in Table 1 were analyzed using a Computerized Speech Lab with the Multi-Dimensional Voice Program.

Summary of Results 5 patients with CFRD and 9 patients with CF alone were included in this study. Patients with CFRD had a similar mean age to patients without CFRD (39 ± 15 vs 33 ± 12 years old, p=0.948). Male CFRD patients were excluded due to low sample size. An acoustic parameter analysis categorized by sex showed vF0 in female patients who have CFRD was significantly higher compared with female patients with CF alone. FTRI was also significantly higher in CFRD individuals.

Abstract #513 Table 1 Mean and standard deviation of acoustic parameter among female cystic fibrosis-related diabetes patients and cystic fibrosis without diabetes (n=7).

<table>
<thead>
<tr>
<th></th>
<th>CFRD</th>
<th>CF alone</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0(kHz)</td>
<td>209.94±14.18</td>
<td>203.21±34.40</td>
<td>0.770</td>
</tr>
<tr>
<td>JH(%)</td>
<td>1.50±1.04</td>
<td>1.14±0.71</td>
<td>0.602</td>
</tr>
<tr>
<td>RAP(%)</td>
<td>0.90±0.60</td>
<td>0.70±0.44</td>
<td>0.625</td>
</tr>
<tr>
<td>SHIM(%)</td>
<td>3.87±2.37</td>
<td>4.61±2.62</td>
<td>0.695</td>
</tr>
<tr>
<td>sAPQ(%)</td>
<td>5.40±3.60</td>
<td>5.00±1.17</td>
<td>0.829</td>
</tr>
<tr>
<td>FTRI</td>
<td>0.97±0.39</td>
<td>0.21±0.01</td>
<td>0.031</td>
</tr>
<tr>
<td>vFo</td>
<td>2.26±0.78</td>
<td>1.04±0.46</td>
<td>0.047</td>
</tr>
</tbody>
</table>

Conclusions With a significant voice character distinction between CFRD and CF alone patients, we present a novel screening tool for diabetes that may have potential use in the CF community. This study is ongoing and will collect additional data on males with CFRD. The results indicate great potential for this technology to be used as a noninvasive test for earlier detection of undiagnosed CFRD. Studies in patients with diabetes without CF have also demonstrated a potential use of this technology [7].

#514 PAN-OR SUBTYPE-SELECTIVE PHOSPHODIESTERASE-4 INACTIVATION REDUCES OBESITY AND IMPROVES GLUCOSE HANDLING IN MICE

DW Irelan*, A Boyd, I Aragon, E Fiedler, W Richter. University of South Alabama College of Medicine, Mobile, AL

10.1136/jim-2022-SRMC.517

Purpose of Study Type 4 cyclic nucleotide phosphodiesterases (PDE4s) comprise a group of four isoenzymes (PDE4A to D) that hydrolyze the second messenger cAMP. Non/PAN-selective PDE4 inhibitors exert potent anti-inflammatory effects and are approved for the treatment of COPD and psoriasis, but are also associated with significant side effects, including nausea, emesis, and weight loss. Here, we explored the idea that the weight loss associated with PAN-PDE4 inhibitor use may be pursued as a desirable therapeutic outcome in the treatment of obesity-related metabolic syndromes. As a first step, we tested whether PDE4 inhibition in mice would replicate clinical data and reduce ageing- and/or high-fat diet-induced obesity in the animals. As each of the four PDE4 subtypes plays unique physiological roles, targeting individual PDE4s is a promising approach to improve the tolerability of PDE4 inhibitor therapy. To this end, we determined the metabolic phenotypes of individual PDE4 subtypes in mice.

Methods Used Body and tissue weights, food and water consumption, glucose and insulin tolerance, serum insulin and glucagon levels, and locomotor activity and exercise capacity were assessed in aged mice, as well as in young mice fed a high-fat diet. To delineate the role of PDE4s, the phenotypes of mice genetically deficient (KO) in each of the four individual PDE4 subtypes, PDE4A to PDE4D, were compared to their wildtype littermates, and mice treated with the PAN-PDE4 inhibitor Rolfumilast were compared to solvent controls.

Summary of Results Treatment with the PAN-PDE4 inhibitor Rolfumilast reduced high-fat diet-induced obesity in mice, as reflected by reduced body weight and white fat pads, without lowering food consumption or increasing physical activity (unchanged locomotor activity and exercise capacity) suggesting that the weight-loss effect of PDE4 inhibition observed in clinical trials is replicated in the mouse. Genetic ablation of PDE4B or PDE4D in mice replicated the effects of PAN-PDE4 inhibition and reduced body- and adipose tissue weights in mice, whereas ablation of PDE4A or PDE4C had no effect. Reduced adiposity as a result of PDE4 inactivation was associated with improved glucose handling and insulin sensitivity, while serum levels of insulin and glucagon were unchanged. These data suggest that PDE4 inactivation does not act via pancreatic hormone release but acts in downstream target tissues to enhance glucose utilization.

Conclusions Inactivation of PDE4s represents a promising approach to tackle obesity and associated metabolic abnormalities such as elevated blood glucose levels. Targeting PDE4B and/or PDE4D with subtype-selective PDE4 inhibitors appears sufficient to mediate these therapeutic benefits and may be free of the adverse effects associated with the PAN-PDE4 inhibitors available to date.
Purpose of Study Diabetic ketoacidosis (DKA) is a common presentation for new-onset insulin-dependent diabetes mellitus (IDDM) in children. Patients should be diagnosed and referred promptly to an experienced center for management. We aimed to determine the frequency of DKA as the initial presentation for new pediatric IDDM cases and analyze missed or misdiagnosed cases at various health care settings (HCS) (primary care [PC], urgent care [UC], or local emergency department [ED]) before the hospitalization. The overarching goal is to identify and treat barriers surrounding the initial diagnosis and management of pediatric IDDM at different HCS.

Methods Used Retrospective chart review for patients admitted to Arkansas Children’s Hospital between 1/1/2021 and 6/30/2021 for new-onset IDDM. Two pediatric endocrinologists independently reviewed the hospital records to assess the appropriateness of pre-admission management for the cases who were seen at an HCS before the presentation. Inappropriate management was defined as the inability to recognize new-onset diabetes, or inaction resulting in delayed management even when the correct diagnosis was made.

Summary of Results 128 patients were admitted for new-onset IDDM (47% in DKA), 68 (53%) of the patients were seen at an HCS within the last 30 days of admission. We identified 18 cases (66% female, 47% Caucasian, 74% on public insurance, age range 4–17 years) with new-onset IDDM and missed or misdiagnosis at PC office (n=13), UC (n=3), and local ED (n=2). 8 patients were diagnosed with an upper respiratory infection (ear infection, strep throat, and sinusitis [2 patients received steroids]), 3 with gastroenteritis, 2 with vaginal candidiasis, and no diagnosis was made for 3. 2 patients were correctly diagnosed with diabetes but they were referred to an outpatient diabetes clinic instead of the ED. Median delay between presentation to the HCS and the hospital was 14 days (range 2–30 days). Mean HbA1c was 11.7±1.6% on admission. 8 out of 18 patients presented in DKA. This number represents 13% of all DKA cases over the study period. 3 out of 18 received hypertonic saline and head CT for suspected cerebral edema. One child died within 4 hours of hospital admission presumably related to due to hyperglycemic coma.

Conclusions 14 percent of children presenting with new-onset IDDM had a delayed presentation due to missed or misdiagnosis. These cases made up 13% of all DKA presentations in children. Failure to diagnose new-onset diabetes, and failure to refer promptly are reasons for delayed presentations. Considering the heterogeneity of the providers (pediatrician, family medicine physician, nurse practitioner, etc.) at various HCS, it is of paramount importance to identify gaps in knowledge among different groups in the initial diagnosis and management of pediatric diabetes. Providing periodical pediatric diabetes training through continuous medical education may help avoid future preventable errors in the management of this vulnerable patient population.
Purpose of Study
This study emphasizes on inappropriate TSH testing and associated cost burden in hospitalized patients. Despite the rarity of severe thyroid disease, symptomatic hypo/hyperthyroidism is often included in the differentials for a multitude of presenting problems to the hospital. The prevalence of unrecognized thyroid disease in hospitalized patients is 1%-2.5%. The most important confounder in hospital is nonthyroidillness syndrome (NTIS), also known as sick euthyroid syndrome. NTIS is observed in up to 62% of hospitalized patients and not exclusively in critically ill patients. No TSH/T4/T3 pattern is pathognomonic of NTIS. The TSH/T4/FT4 can show discordant pattern, leading to difficulty in interpretation. Potential harms include unnecessary testing, inappropriate medication prescription (potentially causing iatrogenic hypo/hyperthyroidism), and specialty referrals. The American Association of Clinical Endocrinologists (AACE) and the American Thyroid Association (ATA) guidelines specifically highlight the ‘cost considerations and potential for inappropriate intervention’ associated with TSH testing in hospital setting.

Methods Used
We performed a retrospective observational study of all hospital admissions at UMMC from January 1, 2021, to December 31, 2021. We obtained the number of encounters and patients admitted along with the TSH levels at admission from the de-identified database. The billing office provided the cost per test.

Summary of Results
TSH test was ordered 8918 times during the year 2020. There were a total of 7293 patients with 8540 encounters. The average age of patients was 53.4 years. Of the total 7293 patients, 3252 (44.6%) were males and 4041 (55.4%) females. The population consisted of 4186 (57.4%) African-Americans, 2830 (39.1%) Caucasians and 257 (3.5%) were others. Of the 8918 tests, 1691 (19%) were abnormal, whereas 7227 (81%) were normal. Of the abnormal tests, 951 (10.7%) were above the normal limit and 117 (1.3%) were below the normal limit. Of the total 8918 tests, 378 (4.2%) were repeat tests during the same hospitalization. With $307 per test, a total of $2.7 million was spent on TSH testing in the year 2020, with $116,046 spent just on repeat testing.

Conclusions
Routine TSH testing in hospitalized patients is unhelpful and often yields confusing results due to low prevalence of unrecognized thyroid disease, high prevalence of NTIS, and difficulty with result interpretation. Mild TSH abnormalities in hospitalized patients do not predict clinically significant thyroid disease. TSH should be tested in patients with high suspicion of thyroid disease or for conditions for which thyroid dysfunction is a known reversible contributor (like atrial fibrillation, delirium) to save healthcare dollars, prevent harm to patients associated with overtreatment or overtreatment, and decrease time spent interpreting abnormal results of unclear significance.
body, causing skeletal deformities, brittle bones, visual problems, megaloblastic anemia, and seizures.

Case A 34-year-old man with past medical history of DM type 1, hypertension, ESRD on dialysis, premature CAD post coronary artery bypass, bilateral hip fractures after minor trauma status post hip replacement, presented with tonic-clonic seizures. He had seizure 3 years back and was on levetiracetam but was non-compliant.

On examination BP was 240/120, short stature, blonde hair, left jaw cellulitis with abscesses, long extremities compared to his body size, pectus excavatum (Marfanoid feature). Labs showed blood glucose >400 mg/dl, Hb 8.2 gm/dl, MCV 97, B12 336 pg/ml, folate 3.6 ng/ml, homocysteine 26.5 mcmol/L (high). In a young individual with seizures, brittle bones, hypertension, premature CAD needing CABG, ESRD associated with marfanoid body habitus should raise the suspicion for a genetic disease. High homocysteine and methionine with normal B12 and folate hints towards CBS enzyme deficiency. He denied family history of genetic disease and was unsure if he had newborn testing for HCY.

Discussion Interesting relationships between diabetes and homocysteinemia are noteworthy.

Diabetes and homocysteinemia can each separately cause vasculopathy, hypertension, leading to renal disease and heart disease. Diabetes alone, without homocystinuria can lead to ESRD and renal osteodystrophy. Homocysteine clearance levels are diminished in ESRD. However, the marfanoid body habitus, megaloblastic anemia, seizures would not be explained by diabetes alone in our case. Moreover, homocysteinemia can potentiate the development of diabetes. Homocysteine is catalyzed either by remethylation to methionine using folate and B12 or by transsulfuration to cysteine using B6, cystathionine B synthase and cystathionine lyase. Homocysteine metabolism produces hydrogen sulfide (H2S). H2S is produced in the islet of pancreas, liver, adipose and skeletal muscle to regulate glucose metabolism. H2S regulates the secretion of insulin from the beta cells of pancreas, controls beta cell apoptosis and well as affects tissue insulin sensitivity. This affects the development of diabetes.

The excitotoxic effect of homocysteine can cause seizures. Interference with collagen cross-linking by sulfhydryl groups of homocysteine causes skeletal deformity. Imbalance of elastin collagen ratio causes changes in microvascular compliance.

An early diagnosis in childhood is essential. Treatment is a special low protein diet to reduce homocysteine levels and supplementation with vitamins B12, folate and B6.

#520 ARE PHYSICIANS CONDUCTING COMPREHENSIVE FOOT EXAMS PRIOR TO PRESCRIBING DIABETIC ORTHOTIC DEVICES? A RETROSPECTIVE COHORT STUDY

R Siddiqua*, F Dilowm, Texas Tech University Health Sciences Center El Paso Paul L Foster School of Medicine, El Paso, TX

10.1136/jim-2022-SRMC.523

Purpose of Study Orthotic devices are widely prescribed by physicians for management of the diabetic foot. However, providers must conduct a comprehensive foot exam to ensure that the patient meets the criteria with at least one of the following: foot deformity, current or previous foot ulceration, current or previous pre-ulcerative callus, previous partial amputation of one or both feet, complete amputation of one foot, peripheral neuropathy with callus formation, and/or poor vascular circulation. This study aims to explore how well providers are conducting proper foot exams prior to prescribing diabetic shoes.

Methods Used Cohort analysis obtained data from the TTUHSC El Paso Internal Medicine clinic on patients who were prescribed diabetic orthotics between 2008–2018. The difference and association between a patient’s qualification status, if a comprehensive foot exam was conducted, and if there was a prior prescription was compared using an unpaired t-test, Chi-square test, and Fisher’s exact test. To determine concordance between qualification status with prior prescription status or if a comprehensive foot exam was conducted, a McNemar test was used. A logistic regression analysis was used to determine the odds of having a comprehensive foot exam or a pre-prescription and qualifying for orthotics. A Poisson logistic regression analysis was used to determine the incidence rate ratio of having either a pre-prescription or comprehensive foot exam while meeting the necessary criteria to qualify. Odds ratio, incidence-rate ratio, 95% CI were utilized, with statistical significance set at p-value ≤0.05.

Summary of Results From N=734 patients, 26.6% did not receive a comprehensive foot exam. Relatively older patients were less likely to receive an exam as well as patients with commercial insurance. Out of 107 patients with a pre-prescription, 62.6% of them did not receive a comprehensive foot exam. Certain qualifying factors like foot deformity, foot ulceration, pre-ulcerative callus, partial amputation, peripheral neuropathy with callus formation were statistically significant in influencing if the patient received a foot exam. 83% of patients who qualify for diabetic shoes received a foot exam, while 53% of patients who do not qualify for diabetic shoes did not receive a foot exam. 80.1% of patients seen by attending, 63.6% of patients seen by NP, and 59.1% of patients seen by a resident received a comprehensive foot exam. Patients with 5 of the qualifying factors were the least likely, while patients with 2 qualifying factors were the most likely to receive an exam.

Conclusions Over one-fourth of patients are not receiving comprehensive foot exams prior to being prescribed orthotics. Residents are doing the poorest job of conducting these exams. Diabetic foot complications constitute up to one-third of the total costs towards the diabetes epidemic. Educating providers on the correct guidelines and the importance of documentation can help lessen the financial burden by preventing unnecessary prescriptions.

Gastroenterology, nutrition & dietary supplements II

Concurrent session

1:00 PM

Saturday February 12, 2022

#521 CLINICAL UTILITY OF LIVER BIOPSY

A Khalifa*, D Rockey, Medical University of South Carolina, Charleston, SC

10.1136/jim-2022-SRMC.524

Abstracts
Abstracts

Purpose of Study Analysis of hepatic histology is traditionally considered to be of critical importance in the diagnosis of parenchymal liver diseases. Nevertheless, a disease focused history taking, thorough physical examination, followed by appropriate laboratory testing and imaging have been hypothesized to accurately predict the underlying liver disease and thus may supplant the use of liver biopsy in many patients.

Methods Used We performed a prospective questionnaire survey study to assess how accurately providers predicted pre-biopsy diagnosis and severity of liver disease, and to determine how histopathology findings might alter would alter the physician’s management plan.

Summary of Results In 81 patients undergoing liver biopsy specifically to investigate one or more liver diagnoses, a simple questionnaire in which different liver disease diagnoses and stage of liver disease (stage 0 (no fibrosis) to stage 4 (histologic cirrhosis)) were chosen pre-biopsy and were completed by attending hepatologists. A total of 106 diagnoses were suspected (more than one diagnosis was possible per patient). The most common pre-biopsy clinical diagnoses were autoimmune hepatitis and alcoholic liver disease (ALD). The most common histological diagnoses were ALD and transplant rejection (16 and 13 patients, respectively). In 63% of the patients, the pre-biopsy diagnosis was the same as was the final histological diagnosis (50/81 biopsies). Furthermore, in 68% (55/81) of patients, physicians were able to precisely predict the underlying stage of fibrosis. Finally, histologic findings impacted management plans in essentially all patients.

Abstract #521 Table 1 Provisional diagnosis vs. histological diagnosis

<table>
<thead>
<tr>
<th>Provisional diagnosis</th>
<th>n = 101</th>
<th>Final diagnosis</th>
<th>n = 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoimmune hepatitis</td>
<td>18</td>
<td>Alcoholic liver disease</td>
<td>16</td>
</tr>
<tr>
<td>Alcoholic liver disease</td>
<td>18</td>
<td>Transplant rejection</td>
<td>14</td>
</tr>
<tr>
<td>Transplant rejection</td>
<td>17</td>
<td>Non-alcoholic steatohepatitis</td>
<td>12</td>
</tr>
<tr>
<td>Non-alcoholic steatohepatitis</td>
<td>17</td>
<td>Normal liver tissue</td>
<td>6</td>
</tr>
<tr>
<td>Drug induced liver injury</td>
<td>5</td>
<td>Autoimmune hepatitis</td>
<td>7</td>
</tr>
<tr>
<td>Liver mass</td>
<td>5</td>
<td>Congestive hepatopathy</td>
<td>5</td>
</tr>
<tr>
<td>Primary biliary cholangitis</td>
<td>3</td>
<td>Drug induced liver injury</td>
<td>5</td>
</tr>
<tr>
<td>Cryptogenic</td>
<td>3</td>
<td>Cryptogenic</td>
<td>4</td>
</tr>
<tr>
<td>Hemochromatosis</td>
<td>2</td>
<td>Steatosis</td>
<td>2</td>
</tr>
<tr>
<td>Overlap syndrome</td>
<td>2</td>
<td>Primary biliary cholangitis</td>
<td>2</td>
</tr>
<tr>
<td>Viral hepatitis</td>
<td>2</td>
<td>Overlap syndrome</td>
<td>2</td>
</tr>
<tr>
<td>Sarcoid</td>
<td>2</td>
<td>Viral hepatitis</td>
<td>2</td>
</tr>
<tr>
<td>Immune reaction</td>
<td>2</td>
<td>Hemosiderosis</td>
<td>1</td>
</tr>
<tr>
<td>Infection (undetermined)</td>
<td>1</td>
<td>Sarcoid</td>
<td>1</td>
</tr>
<tr>
<td>Primary sclerosing cholangitis</td>
<td>1</td>
<td>Budd-Chiari syndrome</td>
<td>1</td>
</tr>
<tr>
<td>Reactive inflammation</td>
<td>1</td>
<td>Angiomyolipoma</td>
<td>1</td>
</tr>
<tr>
<td>Congestive hepatopathy</td>
<td>1</td>
<td>Cholangiocarcinoma</td>
<td>1</td>
</tr>
<tr>
<td>Gilbert disease</td>
<td>1</td>
<td>Focal nodular hyperplasia</td>
<td>1</td>
</tr>
</tbody>
</table>

Conclusions Well-trained specialists can predict the underlying hepatic pathological abnormality and liver disease stage with a reasonably high degree of accuracy (63% and 68%, respectively). However, histopathological tissue assessment identifies unsuspected diagnoses in at least one-third of patients, and histologic findings play an important role in management.

Abstract #522 A NOVEL TECHNIQUE USING ENDOSCOPIC HELIX TACKING SYSTEM FOR GASTROSTOMY CLOSURE

JJ Xie*, MP Patel, M Kaspar, Virginia Commonwealth University Health System, Richmond, VA

10.1136/jim-2022-SRMC.525

Case Report Percutaneous endoscopic gastrostomy (PEG) tubes are frequently placed for those unable to maintain adequate nutrition by mouth. A complication of PEG tubes is a patent gastrocutaneous fistula following removal. There are many techniques for closing gastrostomy tracts such as medical treatment, silver nitrate and endoscopic argon plasma coagulation (APC)/over-the-scope clips (OTSC)/banding, and surgical closure. But they are limited by low success rate, long duration until full closure, defect size, or invasiveness. Here we describe a novel technique using the newly approved Endoscopic Helix Tacking System for gastrocutaneous fistula closure after PEG tube removal in a 20-year-old female with cystic fibrosis.

Patient presented with persistently patent gastrostomy 2 months after PEG tube removal. On endoscopic exam, gastrostomy was found in the antrum. Saline flush injected externally via gastrostomy showed passage into stomach, confirming patent tract. Site was treated with APC fulguration. X-tack sheath was passed through the scope followed by the probe. First tack was positioned 3 mm from edge of gastrostomy at the 10 o’clock position. Forward pressure was applied for probe-to-wall apposition and tack was deployed. The probe was withdrawn, the next tack was loaded, and above steps repeated with subsequent tacks placed at 4, 8, and 2 o’clock positions in a figure-8 pattern with cinching after each deployment. After the 4th tack, probe and sheath were withdrawn, endoscopic cinch was used to secure tacks. Patient did well post-procedurally and discharged home.

Various methods have been used for gastrostomy defect closures. But medical treatment has a low rate of success (63%) in maintaining closure. Silver nitrate plus APC takes an average of 3.5 weeks for tract closure and is therefore frequently combined with a second modality for immediate closure. OTSC are limited by the size/location of the gastrostomy fistula (particularly defects >2.5 cm), endoscopic suturing requires advanced user experience, and surgical closure is
invasive. The recently approved X-tack device offers a minimally invasive option for endoscopic closure of patent gastrostomy tract that is not limited by defect size, location, or user skills. This technique for gastrostomy closure has not been previously described in literature.

**Abstract #523**

**USE OF ELECTRONIC HEALTH RECORDS FOR IDENTIFYING PATIENTS WITH CIRRHOSIS AN ITS COMPLICATIONS: A VALIDATION STUDY**

A Khalifa*, J Obeid, M Gregoski, D Rockey. Medical University of South Carolina, Charleston, SC

10.1136/jim-2022-SRMC.526

**Purpose of Study** Cirrhosis represents a significant disease burden worldwide; administrative data derived from the electronic health record therefore provides an important tool with which outcome and predictive studies can be performed. Here we aimed to validate the accuracy of the ICD-10 codes to previously used ICD-9 codes in identifying patients with cirrhosis.

**Methods Used** We identified 1,981 patients who presented between October 2013 and October 2019 with a diagnosis of cirrhosis and/or its complications using ICD-9 and ICD-10. To validate the sensitivity of the ICD codes, we manually reviewed records of 200 randomly selected patients from this sample. Additionally, to validate the negative predictive value of the ICD codes for cirrhosis, we randomly selected 200 patients with liver disease but without cirrhosis ICD codes (alcohol abuse, non-alcoholic fatty liver disease, viral hepatitis B, and viral hepatitis C). We then calculated the sensitivity, specificity, positive and negative predictive value for each ICD code.

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**Abstract #524**

**UTILIZATION AND COST ANALYSIS OF TESTING PREALBUMIN TO DIAGNOSE MALNUTRITION**

HS Brar *, J Kang, P Bathina. The University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.527

**Purpose of Study** This study emphasizes on the redundancy of prealbumin testing and the associated cost burden in diagnosis of malnutrition. Malnutrition is defined as ‘an acute, subacute or chronic state of nutrition, in which varying degrees of overnutrition or undernutrition with or without inflammatory activity leading to change in body composition and diminished function.’ Serum prealbumin is frequently ordered and is a negative acute-phase reactant. The levels are affected by many systemic factors, with inflammation being the most significant confounder in an acutely ill hospitalized patient.

In a systematic review of 20 studies in non hospitalized malnourished patients, only two studies had prealbumin below normal. The normal levels were seen with a BMI as low as 12.9, suggesting the low sensitivity of prealbumin. Prealbumin levels have improved with nutritional intervention. However, in assessing the relationship between prealbumin and nutritional intake, no difference was seen in prealbumin in critically ill populations irrespective of the caloric intake.

**Methods Used** We performed a retrospective observational study of all patients who received the prealbumin test at UMMC from January 1, 2020, to December 31, 2020. Patient Cohort Explorer was used to obtain de-identified patient data from EPIC. We obtained the number of encounters and patients on whom the prealbumin test was performed from a de-identified database. The billing office provided the cost per test.

**Summary of Results** Prealbumin test was ordered 398 times in patients with malnutrition during the year 2020. There were a total of 203 patients with 282 encounters. The average age of patients was 56.2 years. Of the 203 patients, 106 (52.2%) were males and 97 (47.8%) females. The population consisted of 108 (53.2%) African-American, 92 (45.3%) Caucasians, and 3(1.5%) were others. Of the 398 tests, 250 (62.8%) were
specificity, positive and negative predictive value for each ICD-B, and viral hepatitis C). We then calculated the sensitivity, of the ICD codes for cirrhosis, we randomly selected 200 patients with cirrhosis and/or its complications using ICD-9 and ICD-10. To validate the sensitivity of the ICD codes, we manually classified a total of 66,864 was spent on prealbumin testing in the year 2020, with $19,488 spent just on repeat testing.

Conclusions The American Society of Parenteral and Enteral Nutrition (ASPEN) and the European Society for Clinical Nutrition and Metabolism (ESPEN) have proposed guidelines for screening and assessing malnutrition. These include reduced food intake, nonvolitional weight loss, reduced lean mass, and low body mass index. The consensus is that prealbumin is an indicator of inflammation and lacks the specificity to diagnose malnutrition. Our study showed significant expenditure on prealbumin testing, which has low specificity and sensitivity. Based on our analysis, prealbumin should not be ordered in diagnosing malnutrition to decrease the healthcare burden.

#525 THE IMPORTANCE OF PHYSICIAN-PATIENT RAPPORT AND A PSYCHOLOGICAL APPROACH IN THE TREATMENT OF GLOBUS PHARYNGEUS: A RECURRING, IMPACTFUL, AND MISDIAGNOSED ENTITY

C Vashee*, S Chen, Q Dang, R McCullum, Texas Tech University Health Sciences Center El Paso Paul L Foster School of Medicine, El Paso, TX; Texas Tech University Health Sciences Center El Paso, El Paso, TX

Purpose of Study Globus symptoms are under-appreciated and not well elicited by gastroenterologists. Patients have an underlying fear of having overlooked life-threatening conditions, such as malignancy and diagnostic studies can provide reassurance to patients. Establishing rapport and physician-patient trust, as well as addressing the underlying psychological status of the patient allows treatment to focus on psychoeducation, behavioral modification, and tricyclic medication use.

#526 GASTROPARESIS SYMPTOMS DO CORRELATE WITH THE SEVERITY OF GASTRIC EMPTYING IN PATIENTS WITH A DIABETIC BUT NOT IDIOPATHIC ETIOLOGY

J Diaz, I Sarosiek, K Espino, AJ Ortega*, J Sarosiek, T Bright, R McCullum, Texas Tech University Health Sciences Center El Paso, El Paso, TX

Purpose of Study In gastroparesis (GP), one of the biggest challenges in diagnostic evaluations and clinical therapeutic targets is related to the lack of an established correlation between the amount of food retained in the stomach and the severity of GP symptoms. The goals of our study were: 1) To determine if patients with > 25% isotope retention at 4 hr on gastric emptying scintigraphy (GES), demonstrated a more severe GP symptom score, than those retaining 10–24% at 4 hrs; and 2) whether analyzing the data based on a diabetic or idiopathic etiology statistically affected this symptom assessment.

Methods Used Patients referred for a 4 h GES between 2015 and 2020 were reviewed and divided into 2 groups: Group 1 included those with > 25% retention at 4 hours, and Group 2 those with < 25% of study meal left in a stomach at 4 h, but >10%, which is the upper level of normal. Additionally, we performed analysis of this data separating patients based on etiologies of GP: diabetic (DMGP) or idiopathic (IDGP). Assessments of GP symptoms including Vomiting, Nausea, Early Satiety, Bloating, Postprandial Fullness and Abdominal Pain were conducted at the same time as the GES study by using 5 points-Likert scale (0-absent and 5 extremely severe). All symptoms scores are presenting as mean and 1 SD values. T test results with p<0.05 were regarded as a significant difference between groups.

Abstract #526 Table 1 Means and 1 SD for clinical symptoms

<table>
<thead>
<tr>
<th>GET-4h</th>
<th>Vomiting</th>
<th>Nausea</th>
<th>Early Satiety</th>
<th>Bloating</th>
<th>Postprandial Fullness</th>
<th>Abdominal Pain</th>
<th>Total Symptoms Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;25% DMGP</td>
<td>3.7±0.5</td>
<td>3.9±0.3</td>
<td>3.3±1.0</td>
<td>3.2±0.9</td>
<td>3.4±0.7</td>
<td>2.9±1.2</td>
<td>20.4±3.2</td>
</tr>
<tr>
<td>&gt;25% IDGP</td>
<td>1±1.4</td>
<td>2.5±1.7</td>
<td>2.7±0.5</td>
<td>1.7±1.7</td>
<td>2.75±1.0</td>
<td>2±1.4</td>
<td>12.7±3.9</td>
</tr>
<tr>
<td>p=0.0001</td>
<td>p=0.018</td>
<td>p=0.12</td>
<td>p=0.04</td>
<td>p=0.05</td>
<td>p=0.13</td>
<td>p=0.0006</td>
<td></td>
</tr>
</tbody>
</table>
**Summary of Results**

A total of 972 studies were reviewed. After excluding patients with normal results, those with rapid gastric emptying and patients who had a repeat studies, 316 patients included in analysis. Group 1 had 180 patients; mean age of 51 (19–86 years); 133(74%) female, and 121 (67%) of diabetic etiology. Group 2 had 136 patients with mean age of 50 years (18–87); 121 (67%) females, and 70 (51%) of them had diabetes. The severity of GP total symptoms score was significantly higher in DMGP than IDGP patients in group 1 (p < 0.05). (Table 1). There was no difference in mean GP symptoms severity score observed in DMGP vs. IDGP patients, in group 2 [18.2(±5) vs. 18.6(±4.3) (p=0.89)]

**Conclusions**

Our data restores credibility for supporting a correlation of gastric emptying with symptoms score in GP patients when severity of GES and etiology are taken into account. DMGP is a non-reversible etiology of GP, while IDGP often resolves over time and its symptoms overlap the spectrum and Rome criteria for the diagnosis of functional dyspepsia. Our investigation emphasizes the importance to analyze these 2 etiologies of GP separately when assessing symptom correlations, GES findings, and treatment outcomes.

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**Abstract #527**

DIALYSIS DEPENDENT ACUTE KIDNEY INJURY IS ASSOCIATED WITH DECREASED INCIDENCE OF RENAL RECOVERY DURING SIMULTANEOUS LIVER KIDNEY TRANSPLANT EVALUATION

M Aryan*, S Farley, E Petrie, N Panchani, T Colvin, Shoreibah Ma. The University of Alabama at Birmingham, Birmingham, AL

Purpose of Study

Simultaneous liver kidney (SLK) transplant is applied to those with combined liver and kidney disease. Sustained acute kidney injury (AKI) is defined as persistent renal dysfunction following injury and is an eligibility criterion for SLK listing at 6 weeks. We investigated the prognostic factors associated with renal recovery in SLK evaluation patients following AKI.

Methods Used

We performed a retrospective review from 1/2021–1/2021 at the University of Alabama at Birmingham of cirrhotics who suffered AKI and underwent SLK evaluation for sustained AKI. Non-cirrhotics and those who had SLK evaluation for other causes were excluded. The cohort was further stratified to those who had a 6-week waiting period for renal recovery. Baseline demographics, co-morbidities, AKI origin, and laboratory data were collected. Outcome variables including renal recovery, transplant, and mortality were recorded. Logistic regression analysis was run to assess association between clinical factors and outcome variables.

Summary of Results

Our cohort had 39 patients with 19 (67%) males and an average age of 56.57 ± 9.99 years and an average BMI of 29.26 ± 7.07. Comorbidities included diabetes (49%), hypertension (56%), and hyperlipidemia (26%) with most cirrhotic etiologies being alcohol (38%), nonalcoholic steatohepatitis (28%), and hepatitis C (13%). Exactly 26 (67%) patients had a 6-week waiting period to assess for renal recovery. Fourteen (54%) of these patients were started on hemodialysis (HD) at their AKI of which 2 (14%) had renal recovery after 6 weeks. The remaining 12 (46%) patients were not on HD at their AKI and 10 (83%) had renal recovery at 6 weeks. Logistic regression showed dialysis dependent AKI to be negatively associated with renal recovery (Odds Ratio (OR): -3.13, 95% Confidence Interval (CI) 0.004–0.281; p=0.002). Eight out of the 14 (57%) dialysis patients received SLK compared to only 1 out of the 12 (8%) non-dialysis patients. Logistic regression demonstrated that dialysis patients were more likely to receive an SLK [OR: 17.26, 95% CI 1.46–146.96; p=0.022].

Conclusions

SLK transplant is a curative option in those with combined hepatic and kidney dysfunction. To date, there is no literature on the utility of a 6-week period to assess for renal recovery in sustained AKI. Our data shows that dialysis at initial AKI is a poor prognostic factor for renal recovery. These patients may benefit from expedited transplant. Further work with a larger population and multiple centers is needed to confirm our findings.

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**Abstract #528**

RARE ETIOLOGY OF GASTROINTESTINAL BLEEDING

S Streit*, S Patel, D Jablonski, G Masri. University of Florida Health at Jacksonville, Jacksonville, FL

Purpose of Study

A 31 year-old male with no known past medical history presented following a syncopal episode. Prior to admission he reported a one year history of intermittent rectal bleeding along with a 10lb unintentional weight loss in the past month. He was found to have a hemoglobin of 6 G/DL with a 100.4 degree F fever. He had a CT abdomen/pelvis which showed splenomegaly, a collapsed rectum with mild mural thickening, increased perirectal vascularity, enlarged perirectal and bilateral internal iliac lymph nodes as well as lytic lesions in the bilateral iliac bones concerning for possible malignancy. He was admitted for evaluation of hematochezia, syncope, and rectal prolapse with a differential diagnosis including proctitis vs rectal malignancy. Due to his fever he was started on broad spectrum antibiotics including Vancomycin and Zosyn. Infectious work-up revealed he was HIV positive with a CD4 count of 87 CELLS/UL and had a reactive treponemal infection. The patient was subsequently started on trimethoprim-sulfamethoxazole and given penicillin G. Gastroenterology was consulted with plans for Endoscopy/Colonoscopy for concerns of a lower GI bleed. Endoscopy revealed vesicular lesions in the body of the stomach with discharge and bleeding concerning for possible viral infection. Colonoscopy revealed extensive inflammation within the rectum, rectal prolapse, and thickening of the rectal mucosa with keratinization changes. Biopsies of the colorectal mucosa showed ulcerated granulation tissue with acute and chronic inflammation with...
no evidence of dysplasia. Rectal swabs were positive for Chlamydia Trachomatis infection. The patient was then given one dose of ceftriaxone and started on doxycycline for a 21 day course. After appropriate diagnosis and treatment of chlamydial proctitis the patient was discharged home with noticed improvement of symptoms.

C. trachomatis infections are the most common bacterial infection reported in the United States and is almost entirely transmitted via sexual intercourse. The prevalence of men with rectal chlamydia is underreported due to the fact that it is largely asymptomatic and infrequently tested for. It can present with anorectal pain, discharge, rectal bleeding and if left untreated lead to rectal fistulas and strictures. More commonly it will remain asymptomatic, therefore this disease can be spread silently. Detection of rectal C. trachomatis infection is best by NAAT on rectal specimens. Treatment is recommended whether symptomatic or asymptomatic and generally is empiric therapy for both chlamydia and gonorrhea including doxycycline and a single intramuscular dose of azithromycin. Duration of treatment is dependent on severity of symptoms, ranging from 7 to 21 days of doxycycline treatment. Through this case, we aim to raise awareness to the atypical ways in which a C. trachomatis infection may present.

#529 BREAKING THE LAW: ACUTE CHOLELITHOGENESIS SECONDARY TO KETOCENIC DIET
D Gidita*, A Ali, R Sharma, M Ghali. University of Florida Health Science Center Jacksonville, Jacksonville, FL
10.1136/jim-2022-SRMC.532

Case Report Ludwig Courvoisier postulated that the presence of a distended gallbladder in a jaundiced patient was unlikely to be due to gallstone disease. Amongst his jaundiced patient population, gallstones were commonly found. He noted however, that if a palpable gallbladder was present on examination, the etiology was not secondary to stone formation. Those with gallstone disease instead had fibrosed gallbladders due to repeated episodes of infection and inflammation that resolved as stones were dislodged. This is the so called Courvoisier’s Law. It has been extrapolated in common clinical teaching to associate palpable gallbladders in jaundiced patient with neoplasia such as peripanillary tumors as this process causes persistent obstruction resulting in distention.

A 57 year old female presented with scleral icterus, darkening of urine, pruritus and paleness of stools. She reported significant rapid intentional weight loss of greater than 100lbs over the prior 6 months secondary to initiating a ketogenic diet. She was unconcerned with her weight loss as her ketogenic diet consisted of consumption of large amounts of fat with less than 20 g of carbohydrate daily. She denied prior symptoms suggestive of biliary colic/gallstone disease. Physical exam revealed a non-tender markedly enlarged palpable gallbladder. Lab findings showed direct hyperbilirubinemia and mild transaminitis but was otherwise unremarkable. CA 19-9 was found to be normal.

Abdominal US revealed a markedly distended gallbladder with multiple hyperechoic foci and dilated intra and extra hepatic biliary ducts. Of note abdominal US performed one year prior for unrelated indication showed no cholelithiasis. Sonographic Murphy’s was negative. MRI excluded peripanillary pathology, however revealed an abrupt smooth truncation of the distal common bile duct with ampullary filling defect suggestive of obstruction. Choledocholithiasis was thought to be the etiology of the patient acute onset of obstructive jaundice. She subsequently underwent ERCP with stone removal.

The patient’s presentation mirrored Courvoisier’s dictum. And In the setting of significant weight loss, the concern of malignancy was high. Ultimately however, malignancy was excluded and gallstone disease was found to be the culprit. The ketogenic diet with which our patient closely followed, involved ingestion of large amounts of fats and a significant change in her body’s metabolism. In this case, a patient with no prior evidence of gallstone disease developed innumerable gallstones. Gallstone formation is associated independently with high fat diets, high cholesterol diets as well as with rapid weight loss. The ketogenic diet involves a combination of all of these factors and can be associated with accelerated gallstone formation. She had no prior evidence of gallstone disease and therefore, had no prior fibrosis of her gallbladder. This scenario contrary to the accepted Courvoisier’s Law.

Health care research, quality improvement & patient safety
Concurrent session
1:00 PM
Saturday February 12, 2022

#530 STANDARDIZING THE CENTRAL LINE ASSOCIATED BLOODSTREAM INFECTION PROTOCOL IN PEDIATRIC INTESTINAL FAILURE PATIENTS AT OKLAHOMA CHILDREN’S HOSPITAL
C Meenan*, D Graham, N Gupta, S Talathi. The University of Oklahoma Health Sciences Center, Oklahoma City, OK
10.1136/jim-2022-SRMC.533

Purpose of Study Central line associated bloodstream infections (CLABSI) are a common cause of morbidity and mortality in pediatric intestinal failure (PIF) patients. Currently, no guidelines for management of CLABSI in PIF exist. At our institution, these patients were treated with ceftriaxone and vancomycin, despite a high rate of resistance (30%) to ceftriaxone. A multidisciplinary team developed a protocol for prompt recognition and appropriate management of suspected CLABSI in PIF patients and was implemented on 2/1/2020 (cefepime and vancomycin within 1 hour of emergency department [ED] arrival). The aim of this quality improvement (QI) study was to improve adherence to this protocol by increasing the percentage of appropriate and timely antibiotics in the ED to 50% by 6/30/2023.

Methods Used This single center QI project compared retrospective data from the pre-protocol time period (1/1/2018–1/31/2020) and prospective data from the post-protocol time period (2/1/2020–6/30/2023). Only patients followed at our institution’s Intestinal Rehabilitation Clinic admitted for suspected CLABSI from our ED were included. A key driver diagram, fishbone diagram, and process flow map were used to
determine barriers to protocol adherence. Interventions during the plan-do-study-act (PDSA) cycles included adding cefepime to the ED pyxis, allowing ED staff to order cefepime without infectious disease approval, providing PIF patients with CLABSI cards and provider letters, and educating ED staff and pediatric residents.

**Summary of Results**

62 patients were included, 43 in the pre-protocol and 19 in the post-protocol cohort. There was no difference between age, gender or ethnicity among the two cohorts. Comparing the cohorts, use of ceftriaxone decreased (88% vs 42%, p=0.0002), whereas use of cefepime (2% vs 84%, p<0.001) and vancomycin (77% vs 95%, p<0.05) increased in post-protocol cohort. Median time (minutes) to cephaparosin (104 [IQR 54–163] vs 33 [IQR 15–108], p<0.02) and vancomycin (181 [IQR 143–317] vs 89 [IQR 40–253], p=0.04) significantly decreased after protocol implementation. Percentage of patients receiving antibiotics within 1 hour significantly improved for cephaparosin (30% vs 68%, p=0.003), vancomycin (2% vs 32%, p=0.001) and both antibiotics combined (2% vs 16%, p=0.04).

**Conclusions**

This QI initiative demonstrated improved adherence to the newly developed CLABSI protocol, as exhibited by appropriate and timely antibiotic administration in suspected CLABSI. It is an ongoing study and further interventions may be required to achieve the desired goal.

### Abstract #530

**QUALITY IMPROVEMENT THROUGH KAISER SEPSIS INFANT CALCULATORS (KISHC)**

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10.1136/jim-2022-SRMC.534

**Purpose of Study**

Despite reductions in the incidence of neonatal early-onset sepsis (EOS), suspected EOS remains a major driver of antibiotic use in the nursery. Tools to safely limit excessive testing and antibiotic administration in neonates can prevent microbiome disruption, antibiotic resistance, and impaired bonding. The Kaiser Sepsis Calculator (KSC) is a tool that safely decreases laboratory evaluation and antibiotic administration in newborns, including those who are exposed to chorioamnionitis. Our quality improvement (QI) aim was to use a KSC-based initiative to decrease blood cultures (BCx) and complete blood counts (CBC) among infants ≥35 weeks born to mothers with chorioamnionitis in our newborn nursery by 10% from March to September 2021. A secondary goal was to decrease antibiotic administration by 10%.

**Methods Used**

The KSC was implemented for newborns at University Hospital as part of the larger BORN collaboration with 5 additional centers. The project utilized multidisciplinary involvement at an academic center including pediatric hospitalists, neonatologists, family practice physicians, obstetricians, maternal fetal medicine physicians, residents, fellows, nurse practitioners, and nurses. Starting in March 2021, each new resident cohort was educated on the use of the KSC tool and its implementation within the electronic medical record (EMR). The QI initiative was nurse-driven with nurses screening infants, performing physical exams, and inputting KSC data into the EMR before physician notification. Other processes included incorporating the KSC into our EMR as a centralized data flowsheet and into the admission note as a template. Data from all babies born 6 months before and after protocol implementation were analyzed.

**Summary of Results**

53 chorioamnionitis-exposed infants were included from the pre-intervention period and 40 in the post-intervention period. CBC utilization decreased from 100% of pre-intervention chorioamnionitis exposed infants to 25%, blood cultures dropped from 94% to 30%, and antibiotic use in these infants fell from 23% to 12%. No infants with early onset sepsis were missed due to the protocol change.

**Conclusions**

The implementation of the KSC led to a reduction in testing that exceeded our initial goal. We were able to safely reduce unnecessary BCx, CBC and antibiotic exposure among chorioamnionitis-exposed term and later preterm newborns. This success can be attributed to our multidisciplinary approach, enhanced nursing-physician collaboration and integration of the KSC into our EMR. By continuing our initiative and analyzing a larger cohort, we can further quantify harms avoided (e.g., reduction in mother-infant separation, decreased length of stay) and ensure that no unexpected safety signals are seen.
aim was to reduce the corrected gestational age (GA), in weeks, of goals of care discussions by 20% in preterm infants with grade 2–3 BPD and prolonged invasive ventilatory requirement.

**Methods** Used A multidisciplinary group was formed to find key drivers influential to the timing of goals of care discussions. A retrospective review of preterm infants with grade 2–3 BPD born at UAB over 3 years prior to the initiative characterized our baseline period from which we collected the postnatal age of goals of care discussions and the following outcomes: noninvasive support, tracheostomy, and death. These postnatal ages informed the timing of goals of care discussions for the initiative through division consensus of technology dependent BPD. Also, a tracheostomy ‘candidate list’ was made using the following inclusion criteria: GA less than or equal to 29 weeks, invasive or noninvasive ventilation exposure at 36 weeks’ postmenstrual age, and invasive ventilation requirement for more than or equal to 1 month beyond term corrected age. Monthly meetings of candidate infants characterized patient trajectories informing the content of goals of care discussions (PDSA 2). So as to improve a family’s decision-making process, PDSA 3 involved the development and utilization of tracheostomy educational content and communication strategies.

**Summary of Results** Over the 3-year period, 53 infants met inclusion criteria with a median GA of 25 weeks (IQR 24–26w) and birth weight of 605 g (IQR 510–670). Of these infants 47% transitioned to noninvasive support, 28% received a tracheostomy, and 32% of infants died. Infants remaining on invasive support at 3 months corrected age had an 80% risk of death or tracheostomy informing the postnatal time of goals of care discussions and technology dependent BPD criteria. From our X-MR control chart, the median postnatal age of goals of care discussions was 19 weeks (IQR 13–23), which decreased to 13.6 weeks following PDSA 2 (figure 1).

### Abstract #532 Figure 1

and the balance measure was the average length of NICU stay.

**Summary of Results** 327 infants ≥ 35 weeks with hypoglycemia were admitted to our NICUs from Jan 2018 to Aug 2021. Post-interventions, special cause variation was observed in our outcome metric of percent screened for congenital hypoglycemia disorders, raising the control line from 78.3% to 94.5% [figure 1]. Among infants in our Level 4 NICU, post-intervention there was an increase in the percent of infants with appropriate timing of critical lab testing (22% vs. 57%, p=0.01), and there was a trend toward an increase in the percent of infants with appropriate components of critical lab tests ordered (20% vs. 75%, p=0.09). The median length of NICU stay did not increase post-intervention [figure 1].

**Conclusions** The multidisciplinary QI initiative led to improved testing for congenital hypoglycemia disorders among infants with persistent hypoglycemia without increasing the length of stay. We speculate such improvements reduced the risk of unrecognized hypoglycemia after discharge.

### #533 TIMELY IDENTIFICATION OF TECHNOLOGY DEPENDENT BPD

C Cohen*, SJ Gentle. The University of Alabama at Birmingham, Birmingham, AL

**Purpose of Study** Identifying preterm infants with grade 2–3 bronchopulmonary dysplasia (BPD) that will develop technology dependence is a challenge for care providers causing variability in the timing of goals of care discussions. Our SMART

**Conclusions** Ensuring goals of care discussions occur in a timely and standardized process may reduce the postnatal age of goals of care discussions, tracheostomy, and discharge and optimize neurodevelopmental outcomes in a high risk population of preterm infants.

### Abstract #533 Figure 1

X-chart depicting the postnatal age of goals of care discussions during the baseline period and by PDSA cycle

10.1136/jim-2022-SRMC.536
EVALUATION OF A RESIDENT-LED DOCUMENTATION INITIATIVE OF PEDIATRIC SEVERE SEPSIS ELECTRONIC ALERTS

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10.1136/jim-2022-SRMC.537

Purpose of Study Timely recognition and prompt management of severe sepsis (SS) in hospitalized pediatric patients is vital and can be challenging. An algorithm for real-time identification of SS integrated within the electronic medical record (EMR) was developed and fully implemented at our tertiary care children’s hospital since 2018. Residents on inpatient teams are responsible for assessment and management of the non-ICU SS alerts. Patient evaluation by residents was variable despite the algorithm. We present the preliminary analysis of a resident-led institutional QI project to improve resident assessment and documentation during SS alert evaluations as well as improve SS outcomes.

Methods Used After IRB approval, baseline data was collected by reviewing all non-ICU pediatric SS alerts (1–18 years) from 4/2021 to 6/2021. Multiple PDSA cycles were performed with each intervention followed by review of resident SS alerts documentation between interventions. Specific metrics reviewed included time to resident notification, resident time to bedside and evaluation, timeliness, and content of documentation. First PDSA cycle was creation and introduction of an EMR ‘sepsis macro’ presented at a monthly house-staff meeting (6/2021) followed by resident led peer education during inpatient morning reports on SS evaluation (7/2021). Pre and post education surveys were conducted.

Summary of Results Prior to introduction of the first PDSA cycle, resident documentation for a sepsis evaluation was at 42% during the months of 4/2021 to 6/2021. As of 10/1/2021, resident documentation has improved to 73% with ongoing PDSA cycles and resident education. Resident education is ongoing but has been well-received by residents with current data showcasing improvement in sepsis understanding from 76% to 87.5% through the pre- and post-survey.

Conclusions Resident experience with SS management can be variable. A standardized method of resident documentation for SS evaluations and resident education contributed to timely identification and management of SS. Our project highlights the importance of involving residents in such initiatives and the value of peer education. The knowledge gaps and barriers to documentation were better identified by the residents who led this initiative, similar models of peer education could be adopted for other QI initiatives.

#535 INCREASING ENROLLMENT IN DOLLY PARTON’S IMAGINATION LIBRARY IN A RESIDENT TEACHING PRACTICE

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10.1136/jim-2022-SRMC.538

Purpose of Study Two-thirds of children in Memphis, TN enter kindergarten with below age-appropriate levels of reading readiness, and nearly two-fifths of children live in poverty. Dolly Parton’s Imagination Library (DPIL) is an international book gifting program that partners with affiliates to provide free monthly books to children 0–5 years of age. Participation in DPIL improves kindergarten readiness, standardized testing results, and language proficiency beyond kindergarten. Our clinic, an urban, inner-city resident teaching practice, currently helps families to enroll in the local DPIL affiliate, Books from Birth (BfB). However, many families are missed or lost to the program. This project aims to improve current enrollment in DPIL, increase knowledge of the program, and to maintain enrollment in families who were previously enrolled.

Methods Used Data was obtained via questionnaire and measured current and past enrollment as well as additional covariates for children 0–5 years presenting for well-child check in a resident teaching practice. 1241 questionnaires were collected for baseline data prior to implementation of the first intervention, with post-intervention data collection still ongoing. Interventions included lecturing to residents on DPIL and the enrollment process, DPIL signage in clinic instructing patients to ask their physician about DPIL, and the placement of enrollment forms in exam rooms to facilitate discussion between physician and patient and to initiate the enrollment process if needed. The primary outcome measured was current enrollment rate in DPIL, with secondary outcomes defined as knowledge of DPIL and enrollment retention rate.

Summary of Results Preliminary data analysis shows an approximately 6% increase in current enrollment from pre-intervention (43.5%, n=1241) to post-intervention (49.3%, n=2169) and increase in knowledge of the program from 61.1% pre intervention to 69.5% post-intervention.

Conclusions Early interventions during times of significant brain development and habit formation are vital to improving educational outcomes for children. DPIL is a program shown to improve language development in those enrolled. With this project, we have shown that a resident teaching practice can improve enrollment in DPIL through simple to implement, cost-effective, sustainable interventions in a population with high child poverty and increased risk of poor language proficiency.
Abstracts

**#536** EPIDEMIOLOGY AND MORTALITY TRENDS OF FIREARM INJURIES IN A U.S. METROPOLITAN CITY

J Silver*, TA Ramos, M Stamm, P Gladden, M Martin, M Mulcahey. Tulane University School of Medicine, New Orleans, LA

10.1136/jim-2022-SRMC.539

**Purpose of Study** Gun violence is a significant public health problem. The morbidity and mortality of firearm injuries varies by geographic region, with nonfatal and fatal firearm injuries highest in the South. The purpose of this study was to examine the epidemiology of gunshot wound (GSW) injuries and the association of injury severity with mortality.

**Methods Used** We conducted a retrospective cross-sectional analysis of 2016–2019 data from the Louisiana Hospital Inpatient Discharge Database (LAHIDD), a mandatory reporting system for all licensed hospitals in the state. Hospitals included were in the Greater New Orleans area, defined by facilities within Orleans Parish and Jefferson Parish north of the 29.85°N latitude. Patients 18 years and older at the time of hospitalization for GSW based on the International Classification of Diseases, Tenth Revision were included. Injury severity was measured by the New Injury Severity Score (NISS), with high NISS defined as scores in the highest tertile. Primary outcomes assessed included mortality, case fatality ratios (CFRs), and years of potential life lost (YPLL). YPLL was calculated based on the reference age of 65 years.

**Summary of Results** 1,751 firearm injuries were identified. The patient sample was 87.7% Black and 83.4% male, with a mean age of 34 years and a prevalence of mortality of 6.9%. 943 (63.4%) GSW victims had Medicaid insurance. Overall, 1,497 (94.0%) of injuries were caused by unspecified firearms and 1,095 (62.5%) were unintentional. 1,124 (64.05%) patients underwent some type of surgical intervention, with orthopaedics being the most commonly consulted surgical service. Compared to those with low NISS, the multivariable adjusted odds ratio and 95% confidence interval for mortality associated with high injury severity score was 16.32 (8.96, 29.69) (table 1). Firearm CFRs were highest in 2016 (8.1%). Total YPLL due to firearm injury between 2016–2019 was 3,337 years.

**Conclusions** Victims with a high NISS were 16.32 times more likely to die from their injury compared to their low NISS. Young, Black males with income less than or equal to 138% below the federal poverty income guidelines were the most frequent victims of gun violence. This data may help inform public health interventions and guidelines for clinical practice to reduce the societal and healthcare costs of gun violence.

**#537** THE EFFECTS OF ACETYLSALICYLIC ACID AMONG LATINO PATIENTS OF COVID-19

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10.1136/jim-2022-SRMC.540

**Purpose of Study** Retrospective Observational Study. The novel coronavirus SARS-CoV-2, responsible for the Covid-19 pandemic, has led to the death of over 4.8 million people worldwide and over 700 thousand people in the United States. The Latino population has been especially vulnerable and is counted among those most affected by the pandemic. Many fatalities of this novel infection have occurred due to an unknown mechanism causing increased thrombotic activity. Acetylsalicylic Acid (ASA) or aspirin which in low doses functions as an antiplatelet drug by inhibiting thromboxane A2, could be of potential benefit due to its anti-inflammatory and antithrombotic qualities.

**Methods Used** We collected data from the medical charts of 1,039 Latino patients hospitalized to treat COVID-19. We then assessed the outcomes of patients who have been treated with ASA (332) in comparison to those who had not been treated with ASA (707). The main parameter for our study was mortality. Length of hospitalization, ICU admission, and need for supplemental oxygen upon discharge were among the secondary outcomes also analyzed. We investigated further by then selecting for patients who suffered myocardial infarction (MI), stroke, or pneumothorax, and again comparing the two groups.

**Summary of Results** In this study, we found significant evidence that including ASA in COVID-19 treatment regimen decreases the mortality among patients who also suffered a myocardial infarction, stroke, or pneumothorax. These patients were 62% less likely to have a mortality (P=0.019) during their stay in the hospital as compared to those who did not receive aspirin. We also found significant evidence suggesting that a treatment regimen including ASA decreased the admission to ICU and the need for oxygen supplementation upon discharge. Patients who were given Aspirin as part of their treatment regimen were 31% less likely of being transferred to the ICU (P=0.036). Patients were also found to be 42% less likely of being discharged with supplemental oxygen if given aspirin as part of their treatment regimen (P=0.003).

**Conclusions** We conclude that our study has shown how aspirin could possibly influence the course of the SARS-CoV-2 viral infection by decreasing thrombotic activity. ASA can have significant health affects among minority populations by improving mortality among patients who also suffered a MI, stroke, or pneumothorax as well as decreasing the strain on hospital ICUs and saving health resources such as oxygen. This important information will be helpful in guiding doctors and other healthcare workers as we continue to battle the COVID-19 pandemic and care for future COVID patients. Further research involving randomized control studies and larger samples sizes must be pursued.
TARGETED CYTOMEGALOVIRUS SCREENING IN A LEVEL IV NEONATAL INTENSIVE CARE UNIT

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10.1136/jim-2022-SRMC.541

Purpose of Study To establish a targeted screening program for infants with failed hearing screens admitted to a level IV neonatal intensive care unit (NICU) and to provide parental education about congenital cytomegalovirus (CMV) and its relation to hearing loss.

Methods Used This quality improvement project aimed at having 90% or greater of infants admitted to our 92 bed NICU to have a urine CMV PCR drawn after a failed ABR or OAE hearing screen in one or both ears prior to discharge by July 1, 2021. The study began September 1, 2020 and the IHI Model for Improvement was used to develop the project. We conducted 4 Plan-Do-Study-Act cycles that included education of the new guidelines to stakeholders and parents, compliance with the new standardized process, proper CMV testing, and proper documentation of CMV testing and audiology follow up.

The CMV test results were followed on a weekly basis by a group of neonatologists. Any positive CMV result would be reported to the infant’s pediatrician as well as an infectious disease specialist for referral to the USF congenital disease clinic. We collected our base line rate of congenital CMV screening and referral over 3 months. At 5 months from the start of the project, we suggested hearing screen to be completed at least 1–2 days before discharge to avoid delays due to collection of urine.

Summary of Results Education to providers and staff in the NICU occurred on August 8, 2020. Materials for parental education were included in the guidelines. Intervention started on September 1, 2020. Three months after program rollout, the proportion of infants who failed hearing screen and had a urine CMV test drawn prior to discharge from the NICU was 62%. By May 2021, the proportion of infants who had a urine CMV PCR before discharge after failing their hearing test was 100%. All infants who failed hearing screen and were CMV positive had proper follow up. 100% of parents were given educational handouts after their failed hearing screen by audiology and/or medical team before the infant was discharged.

Conclusions After 3 cycles, we were able to successfully establish a targeted CMV screening guideline to ensure all infants who failed a hearing screen were tested for CMV using urine PCR prior to discharge. We also were able to ensure proper follow-up of all positive CMV results after infants were discharged to the required specialties. All parents received specific educational materials on congenital cytomegalovirus infection and its effects on newborns prior to discharge.

RETROSPECTIVE REVIEW OF DOG BITES IN PEDIATRIC PATIENTS

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10.1136/jim-2022-SRMC.542

Purpose of Study Dog bites have historically been a common cause of pediatric emergency department (ED) visits. In June 2020 in the Journal of Pediatrics, ‘Dog Bites in Children’ Surge during Coronavirus Disease-2019: A Case for Enhanced Protection’ discussed an almost three-fold increase in dog bites treated in the ED since the beginning of the COVID-19 pandemic at an urban Children’s Hospital in the Midwest. This study aimed to describe the epidemiology of dog bite ED visits and to evaluate changes in dog bite visits over 2019 (pre-COVID) and 2020 (during COVID). This study addressed two objectives: 1) To describe the epidemiology of dog bite related ED visits and admissions; 2) To evaluate changes in the rate of dog bite ED visits during pre-Covid and during Covid.

Methods Used This study reviewed 2 years (2019 and 2020) of dog bite visit data from the ‘Children’s Injury Database’ (CID), our injury surveillance system of ED attended injuries. Descriptive statistical and epidemiologic analyses were conducted using Epi Info 7 (CDC). Statistical comparisons and analyses of continuous and categorical data were performed. Differences in proportions and T Test of means were reported with corresponding 95% Confidence Intervals (CI’s).

Summary of Results During the 2 year period, 522 dog bite cases were treated representing 1.7% of all injury visits. Gender analyses indicated a higher proportion of males vs females (53.6% vs 46.4%), respectively, overlap of exact CI’s of proportions were observed. A higher proportion of white patients vs nonwhites among dog bite cases was observed (62.8% vs 37.2%), respectively, (no overlap of exact confidence intervals of proportions). This difference was also significant when comparing race proportions of dog bite visits to all other injury visits (62.8% vs 48.7%), respectively, difference of 14.1%, 95% CI (9.8, 18.2). Mean patient age was 6.1 yrs. Outcome metrics included patient disposition (3 categories): Admitted 57 (10.9%), Discharged 458 (87.7%), Other 7 (1.4%). Admitted patients were younger (statistically) 4.9 yrs vs 6.3 yrs, age difference -1.4 yrs 95% CI diff (-0.3, -2.5). Total length of stay for Admitted = 117 days (mean 2.1 days) and for Discharged mean hrs in the ED 3.7 (6.d. 8.7). Total charges were $2.6 million (mean = $4902, median $2043). The leading anatomic sites injured were head, face, and neck, all ages, (61.1%), but accounted for 79.8% for ages under 6 yrs.

An increase in the rate of dog bite visits was detected during 2020 vs 2019, (20.4 per 1,000 injury visits vs 14.6 per 1,000 visits, rate difference = 5.8, 95% CI (3.4, 9.6).

Conclusions The pandemic of COVID-19 with a national shelter in place order was associated with more dog bite visits in

Abstract #538 Figure 1 Overall CMV testing among failed hearing screens
the ED. 2020 had 20% fewer total injury visits than 2019, yet 10.5% higher number of dog bite visits. Dog bites are a significant cause of injury in children and result in costly visits seen in the ED. These data will support parental education on preventing dog bite injuries in children.

Infectious diseases II
Concurrent session
1:00 PM
Saturday February 12, 2022

#541  RISK FACTORS AND MORTALITY FROM LISTERIOSIS IN PATIENTS WITH END-STAGE RENAL DISEASE
1S Tran*, 1S Bany, 1J Waller, 1W Bollag, B Siddiqua, A Mohammed, M Kheda, S Padilla, Y Young, GL Bau. Augusta University Medical College of Georgia, Augusta, GA; VA Medical Center Augusta Downtown, Augusta, GA; Augusta University College of Nursing, Augusta, GA

Purpose of Study End-stage renal disease (ESRD) is a known immunocompromising status that predisposes patients to developing infections relative to the general population. Disease from *Listeria monocytogenes* may affect both the immunocompetent and immunocompromised, but tends to be more severe in the immunocompromised. We studied a population of patients with ESRD to identify clinical risk factors for *Listeria* and mortality.

Methods Used Using the United States Renal Data System database from 2004–2015, data from the Centers for Medicare and Medicaid Services (CMS) Form 2728 was extracted to obtain demographic information, while International Classification of Diseases (ICD)-9/10 codes were used to identify patients with a diagnosis of *Listeria* and other clinical risk factors for Listeriosis. Demographic parameters and risk factors associated with *Listeria* were modeled using logistic regression while association with mortality was assessed with Cox Proportional Hazards modeling.

Summary of Results A diagnosis of *Listeria* was identified in 291 (0.01%) of a total 1,071,712 ESRD patients. Black race was associated with decreased risk of *Listeria* compared to white race, while a diagnosis of cardiovascular disease, connective tissue disease, upper gastrointestinal ulcerative disease, liver disease, diabetes, cancer, and human immunodeficiency virus were all associated with an increased risk of *Listeria*. Patients with *Listeria* had an increased risk of death relative to patients without *Listeria* (HR = 1.79; 95% CI 1.52–2.10) when controlling for demographics and clinical risk factors.

Conclusions Despite controlling for a wide variety of demographic parameters and chronic medical conditions presumed to contribute to *Listeria*, a *Listeria* diagnosis remained associated with increased mortality. As a result, *Listeria* infection in dialysis patients should be managed carefully. Future studies should address the causes of adversely affect the health of children into adulthood. Further work should focus on identifying and labeling obese children in the inpatient setting as well as providing them with nutritional counseling and, when appropriate, outpatient referral to a multidisciplinary nutritional clinic.

Abstracts

INPATIENT OBESITY RECOGNITION AND DIAGNOSIS IN PEDIATRIC PATIENTS

1,2M Hood*, 1,2) Winer. 1University of Tennessee Health Science Center, Germantown, TN; 2Le Bonheur Children’s Hospital, Memphis, TN

Purpose of Study Obesity is a growing and poorly recognized health issue in pediatrics. There is little national research on using inpatient admissions to address obesity and provide counseling to a captive audience who otherwise might not receive this guidance. The first step to leveraging this opportunity is identification. Our research project seeks to quantify the current state of inpatient pediatric obesity recognition across the nation and what patient demographics and hospital variables predict appropriate obesity diagnosis.

Methods Used We performed a retrospective cohort study of pediatric inpatients age 6–18 utilizing CERNER Health Facts database. We aimed to 1) compare the rate of obesity in children admitted to the hospital with published outpatient statistics, 2) determine the proportion of admitted children who are obese by BMI that have an ICD diagnosis for obesity, and 3) identify hospital-level variables that predict successful identification of obesity. Data included patient and hospital demographics, was summarized using percentages, and was evaluated using Chi-square test for independence.

Summary of Results We identified 179,700 total patients. We excluded 129,522 (72.1%) due to missing height or weight data, leaving 50,178 included subjects. Obesity by BMI was identified in 10568 (21.1%) patients, a proportion similar to stated outpatient rates. Of the 10568 obese patients, only 1731 (16.4%) had a documented diagnosis of obesity. This occurred most in ages 16–18 (22.2%), followed by ages 11–15 (18.4%), and only 10.1% in ages 6–10. There was a significant difference between the appropriate obesity documentation for obese males (14.3%) and obese females (18.7%). Appropriate obesity diagnosis varied significantly among race/ethnicity; in decreasing order, the rates were Pacific Islander (30.8%), Native American (20.0%), African American (19.0%), Caucasian (15.9%), Asian (13.1%), and Hispanic (5.6%). Appropriate obesity documentation has increased over time: 12.5% between 2009–2011, 15.4% between 2012–2014, and 19.6% between 2015–2017. There exist significant differences in obesity diagnosis proportion by hospital size and by U.S. Census region; the South (11.6%) has the lowest proportion of appropriate obesity diagnosis.

Conclusions Childhood obesity continues to increase over time and yet is grossly under-recognized with fewer than 1 in 5 obese children being diagnosed as such in the inpatient setting. There is a significant disparity in the appropriate inpatient recognition of pediatric obesity among age groups, genders, races/ethnicities, and census regions. Without recognition and nutritional education, obesity will continue to

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Conclusions Childhood obesity continues to increase over time and yet is grossly under-recognized with fewer than 1 in 5 obese children being diagnosed as such in the inpatient setting. There is a significant disparity in the appropriate inpatient recognition of pediatric obesity among age groups, genders, races/ethnicities, and census regions. Without recognition and nutritional education, obesity will continue to adversely affect the health of children into adulthood. Further work should focus on identifying and labeling obese children in the inpatient setting as well as providing them with nutritional counseling and, when appropriate, outpatient referral to a multidisciplinary nutritional clinic.
mortality and the sequelae of Listeria infection to further inform clinical management.

**#542 ENDOCARDITIS CAUSED BY NEISSERIA ELONGATA IN A PEDIATRIC PATIENT**

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**Background** Neisseria elongata species are part of the normal microbiota and are considered nonpathogenic. Even so, the virulent nature of this organism has been described with case reports of endocarditis, bacteremia and osteomyelitis. *N. elongata* endocarditis commonly affects the aortic and mitral valves. It can present as a serious infection with complications of cardiac dysfunction, myocardial abscess and systemic embolization.

**Case description** A 12-year-old female, with history of repair at 2 years of age in China. Following adoption and migration to the United States, she underwent placement of conduit due to presence of calcification. Her fever however persisted despite several days of antibiotics prompting addition of ampicillin and gentamicin to ceftriaxone. Repeat echocardiogram performed showed absence of aortic valve vegetation but noted thickening of aortic valve leaflets and mild stenosis of the right ventricle- pulmonary artery conduit due to presence of calcification. Her fever however persisted despite several days of antibiotics prompting addition of ampicillin and gentamicin to the regimen. Further evaluation with brain magnetic resonance imaging, renal ultrasound and eye exam did not reveal systemic emboli. Computed tomography angiography showed no valvular abscess, thrombus/emboli or any pathology in the conduit and pulmonary artery. No surgical intervention was deemed necessary. Eventually she became afebrile, ampicillin and gentamicin were discontinued and ceftriaxone was given for a total of 6 weeks.

**Conclusion** Cases of *N. elongata* causing endocarditis have been reported in the adult population however there are very limited reports in children. In patients with congenital heart disease presenting with unexplained fever, infective endocarditis needs to be considered given risk for complications and mortality.

**#543 OUTBREAK OF SARS-COV-2 IN HOSPITALIZED HEMODIALYSIS PATIENTS: AN EPIDEMIOLOGIC AND GENOMIC INVESTIGATION**

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**Purpose of Study** Healthcare-associated transmission of SARS-CoV-2 is relatively rare and may be difficult to quantify. We performed an epidemiological investigation and SARS-CoV-2 genome sequencing to define the source and scope of a SARS-CoV-2 outbreak in a cluster of hospitalized patients.

**Methods Used** We conducted an outbreak investigation after identifying hospital-onset COVID-19 in patients receiving hemodialysis in January 2021. Electronic medical record review, staff interviews, review of employee schedule logs, and contact tracing were used to determine the outbreak timeline and identify potentially exposed healthcare workers (HCW). SARS-CoV-2 genomes were sequenced from residual nasopharyngeal swab samples from 6 individuals in the outbreak investigation and compared to sequences from 14 patients in the same facility, 54 patients in nearby facilities, and 375 publicly available sequences from individuals in the state of Georgia.

**Summary of Results** Eight patients with hospital-onset COVID-19 were identified (Cases 1–8); all were receiving hemodialysis and 5 were bedded in a single inpatient nursing unit. Among 53 potentially exposed HCW, 29 underwent testing and 5 were positive (Cases 9–13). The suspected index patient (Case 1) was found to have been coughing and inconsistently wearing a mask during a hemodialysis session on the same day that 5 of the 7 other patients and one HCW (Case 10) were in close proximity in the hemodialysis unit (figure 1A). Further investigation revealed lack of use of curtain barriers in the hemodialysis bays, inconsistent use of personal protective equipment by HCW, and overcrowding of staff breakrooms. Among the only 6 samples available for phylogenetic analysis, SARS-CoV-2 sequences from 5 (4 patients and 1 HCW, Case 9) were identical and at least 4 SNPs removed from the next closest sequence in this study, supporting a transmission cluster (figure 1B). The sequence from the sixth sample (HCW Case 10) was phylogenetically distinct, indicating an independent source of infection.

**Conclusions** Lack of appropriate respiratory hygiene led to SARS-CoV-2 transmission during a single hemodialysis session, based on clinical and molecular epidemiology. Use of appropriate PPE for both patients and HCW and other institution
Abstract #543 Figure 1  Epidemiological and viral genomic analysis of the 6 outbreak cases with samples available for SARS-CoV-2 genome sequencing. (A) Exposure and onset of symptoms. Four patients with hospital-onset COVID-19 were receiving hemodialysis and bedded in a single inpatient renal ward. A fifth patient (Case 6) was bedded in the same inpatient renal ward. Two exposed healthcare workers were working on that unit (Case 9) or in the hemodialysis unit (Case 10). (B) Maximum-likelihood phylogenetic tree showing SARS-CoV-2 sequences from four patients (Cases 1, 2, 3, and 6; red) and two healthcare workers (Case 9, 10; blue stars) with samples available as well as 10 patients in the same facility between 12/12/2020 and 1/13/2021. Bootstraps are shown for high confidence branches (>80)

prevention measures are critical to prevent SARS-CoV-2 transmission.

#544 IN VITRO INTERACTION OF LEFAMULIN, A PLEUROMUTILIN ANTIBiotic, AND DOXYCYCLINE AGAINST LINEZOLID- AND VANCOMYCIN-RESISTANT ENTEROCOCCUS FAECIUM

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Purpose of Study In 2019, the CDC confirmed vancomycin-resistant Enterococcus (VRE) as a serious public health threat. In the U.S., there were 55,000 nosocomial VRE cases in 2017 with 10% related deaths. Although rare, VRE has also shown resistance to linezolid. As these organisms continue to acquire resistance to common forms of treatment, the search for alternative therapies is important. Combination therapy may prove useful. In a previous study, the combination of doxycycline and fosfomycin showed synergy against linezolid and vancomycin resistant E. faecium (LRVREF). Lefamulin, a novel pleuromutilin, showed synergy in combination with doxycycline against S. aureus (Pre-FDA approval testing). Here, we investigate the in vitro interaction of doxycycline and lefamulin against LRVREF, first, using an Etest method. Since there is no gold standard for in vitro interaction testing, time-kill assay (TKA) was also performed against LRVREF to compare with Etest.

Methods Used Twenty-four genetically unique clinical LRVREF organisms were tested. MICs were obtained by Etest and broth microdilution (in triplicate) for each isolate and read at 24 h. Synergy determination was performed (in triplicate) using an Etest MIC:MIC synergy method for all 24 isolates. The summation fractional inhibitory concentration (ΣFIC) was calculated for each isolate with the mean value used for interpretation. Synergy was defined as a ΣFIC ≤0.5; additivity, 0.5 – 1; indifference, >1 – 4; antagonism, >4. Synergy testing was also performed using TKA for the 8 LRVREF that showed synergy with the Etest MIC:MIC method. Synergy was defined as ≥2 log_{10} decrease in CFU/ml after 24 h by the combination compared to the most potent agent alone; additivity, a 1 to <2 log_{10} decrease; indifference, <1 log_{10} change.

Summary of Results The Etest MICs (µg/mL) were 0.094 – 24 (50% susceptible) for doxycycline and 0.25 – 12 (no interpretable breakpoints available) (96% of isolates were inhibited at ≤1.5 µg/mL) for lefamulin. The combination of doxycycline and lefamulin revealed synergy in 8/24 or 33% (no. isolates/Σ
Purpose of Study *Streptococcus pneumoniae* (Spn) and other streptococci produce a greenish halo on blood agar plates referred to as α-hemolysis. This phenotype is utilized by clinical microbiology laboratories to report culture findings of α-hemolytic streptococci. The α-hemolysis halo on blood agar plates has been related to the hemolytic activity of pneumococcal pneumolysin (Ply), or to a lesser extent, to lysis of erythrocytes by Spn-produced hydrogen peroxide. In this study, we investigated the molecular basis of the α-hemolysis halo produced by Spn.

Methods Used Wild-type strains TIGR4, D39, R6, and EF3030, and isogenic derivative Δply mutants, all produced a similar α-hemolytic halo on blood agar plates while cultures of hydrogen peroxide knockout ΔpxxB/ΔlctO mutants each lacked this characteristic halo. Spectroscopic studies demonstrated that culture supernatants of wt strain TIGR4 released heme-hemoglobin, and oxidized oxyhemoglobin to methemoglobin within thirty minutes of incubation.

Summary of Results As expected, given the pneumolysin hemolytic activity and that hydrogen peroxide contributes to the release of pneumolysin, TIGR4 isogenic mutants Δply and ΔpxxB/ΔlctO had a significantly decreased release of heme-hemoglobin from erythrocytes. However, TIGR4 Δply that produces hydrogen peroxide, oxidized oxyhemoglobin to methemoglobin whereas TIGR4 ΔpxxB/ΔlctO failed to produce oxidation of oxyhemoglobin. Spectroscopic studies using EF3030 wt and Δply showed the same results; EF3030 Δply had a decreased release of heme-hemoglobin from erythrocytes but still oxidized oxyhemoglobin. Additionally, the spectroscopic study was repeated with catalase, a hydrogen peroxide scavenger, and results showed that oxidation of oxyhemoglobin did not occur in the case of wt, Δply, or ΔpxxB/ΔlctO. We demonstrated that the so-called α-hemolysis halo is caused by the oxidation of oxyhemoglobin (Fe$^{2+}$) to a non-oxygen binding methemoglobin (Fe$^{3+}$) by Spn-produced hydrogen peroxide.

Conclusions Because Spn colonizes the human lung, the molecular basis of oxidation of oxyhemoglobin might have important implications for pathogenesis. Oxidation of oxyhemoglobin to the nonbinding oxygen form, methemoglobin, might occur in the lungs during pneumococcal pneumonia.

#545 HYDROGEN PEROXIDE PRODUCTION BY *STREPTOCOCCUS PNEUMONIAE* RESULTS IN OXIDATION OF OXYHEMOGLOBIN TO METHEMOGLOBIN RESEMBLING ALPHA HEMOLYSIS

1EE McDevitt*, 1Vidal, 1A Scasy, 1L McDaniel, 1F Khan, 2Z Eichenbaum. 1The University of Mississippi Medical Center, Jackson, MS; 2Georgia State University College of Arts and Sciences, Atlanta, GA

Abstract #545 Figure 1

#546 HEALTH INSURANCE, ‘THE GREAT EQUALIZER’: DO HUMAN IMMUNODEFICIENCY VIRUS CARE OUTCOMES DIFFER BY RACE AMONG INSURED PATIENTS AT A LARGE URBAN SEXUAL HEALTH CLINIC?

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Purpose of Study Prior studies have found racial disparities in HIV care outcomes and have shown that Black and Hispanic patients are less likely to achieve viral suppression compared to white patients. Reasons for this inequity include lack of healthcare access and other socioeconomic barriers that disproportionately affect patients of color. This study aims to determine if racial disparities in HIV care outcomes still exist in a setting where all patients have insurance and access to HIV care.

Methods Used This was a retrospective study to evaluate racial disparities in HIV care among insured patients at a private infectious disease practice in Orlando, Florida during the first year of care. Eligible patients included those aged 18–65 years who were treatment-naïve or off antiretrovirals (ARVs) for ≥1 month seen between 2016–2021. Demographic and clinical variables were extracted from the electronic medical record of all enrolled subjects. The primary objective was to evaluate racial disparities in the HIV care cascade by comparing the proportion of patients reaching each step with unadjusted chi-squared testing. The secondary objective was to evaluate additional risk factors for viral suppression using multivariate logistic regression.

Summary of Results Overall, 262 patients were enrolled with a median age of 34 years (range 18–40).11.5% were female, 30.5% were white, 30.5% were Black, 30.5% were Hispanic and 8.4% self-identified as other. All patients were insured and 13.3% had public insurance. There were no significant differences by race among those linked to care or those who initiated ARVs, but significant differences by race existed.
among those retained in care [92.5% Black vs. 82.5% Hispanic vs. 81.8% Other vs. 95.0% White, (p=0.033)] and those who achieved viral suppression in the first year of care [56.3% Black vs. 66.3% Hispanic vs. 68.2 Other vs. 81.3% White, (p=0.009)]. In multivariate analyses, Black patients were less likely to achieve viral suppression compared to white patients [OR=0.371 (95% confidence interval (CI): 0.173, 0.792)]. Patients with baseline CD4+ T-cell counts<200 cells/mm³ were significantly less likely to achieve viral suppression compared to those with CD4+ T-cell counts>200 cells/mm³ [OR=0.459 (95% CI: 0.241, 0.872)].

Conclusions This study showed that patients of color, especially Black patients, were less likely to achieve viral suppression at the end of the first year of care despite having access to care. We also found that baseline CD4+ T-cell count<200 cells/mm³ was significantly associated with viral non-suppression. These data suggest that other unmeasured factors may disproportionately affect viral suppression in Black patients, such as stigma and homophobia. Additional research should be conducted to identify factors that lead to higher non-suppression rates in patients of color, so that appropriate interventions can be implemented to facilitate their achievement of viral suppression.

#547 ASSESSING COVID-19 VACCINE UPTAKE AMONG PEOPLE LIVING WITH HIV AT AN INFECTIOUS DISEASES CLINIC

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Purpose of Study The Atlanta VA Healthcare System (AVAHCS) Infectious Diseases Clinic (IDC) implemented measures to promote and improve COVID-19 vaccination rate in people living with HIV (PWH). Our goal was to determine the impact of these efforts on COVID-19 vaccination rates and compare with other populations.

Methods Used Beginning in March 2021, the AVAHCS IDC implemented targeted outreach strategies to educate PWH regarding COVID-19 vaccinations including emails, phone calls, and informational appointments. We assessed vaccination rates among PWH who had at least one clinical encounter in the IDC from December 15th, 2020 through August 5th, 2021. We stratified vaccination status by age and HIV viral load and compared PWH vaccination rates with all patients at the AVAHCS and the population of Georgia.

Summary of Results As of August 5, 2021, the overall rate of full vaccination was among 1248 PWH was 69% (864 patients out of 1248). Seventy six percent of PWH received at least one dose (953 patients out of 1248). In comparison, the vaccination rate of all patients at the AVAHCS (50%) and the population of Georgia (39%) was lower (figure 1 and figure 2). PWH with a HIV viral load of <200 copies/ml had a higher vaccination rate compared to PWH with a higher viral load (77% vs. 66% respectively). In each age cohort, the PWH vaccination rate was higher compared to the state of Georgia; the greatest difference was observed among 45–64-year-olds (26%).

Conclusions PWH at IDC had higher rates of COVID-19 vaccination compared to all patients at the AVAHCS and the population of Georgia. This is likely due to proactive patient outreach, education and follow up.

#548 A CASE OF NONTYPHOIDAL SALMONELLA BACTEREMIA, DISSEMINATED HISTIOPLASMOSIS, AND DISSEMINATED MAC IN AN IMMUNOSUPPRESSED PATIENT


Case Report A 51-year-old man with HIV/AIDS (CD4 count 15), Hepatitis C without cirrhosis, and a history of nasopharyngeal DLBCL (in remission) and Cryptococcal meningitis (status post induction therapy) presented for fever associated with fevers, dyspnea, productive cough, and pleuritic chest pain for three days superimposed upon a one-week history of fatigue and generalized body aches. This patient was on maintenance therapy with oral fluconazole for Cryptococcal meningitis. He had recently been restarted on his antiretroviral regimen (bictegravir/emtricitabine/tenofovir alafenamide) approximately two weeks prior to and he was adherent with his PJP prophylaxis (atovaquone, which was chosen for his G6PD deficiency). He was febrile (104.8°F), tachycardic, and tachypneic upon presentation but hemodynamically stable and without severe respiratory distress or oxygen requirements. He was cachectic with poor dentition and temple wasting. His lung exam demonstrated mildly diminished breath sounds bilaterally but without significant rales or wheezes. His abdominal and skin exam was benign. There was a dense pulmonary consolidation of his right middle and lower lobes with necrotic...
lymphadenopathy demonstrated by CT scan. Blood cultures grew Gram negative rods (4/4 bottles) within 12 hours which were identified as pan-sensitive Salmonella enterica. Histoplasma antigen was positive and the patient underwent a bone marrow biopsy as well as bronchoscopic biopsy. Bronchoscopic biopsy demonstrated histoplasmosis. Mycobacterium avium complex (MAC) grew from prior AFB blood cultures. At the time of discharge his outpatient regimen included his prior antiretroviral, atovaquone, oral levofloxacin to complete treatment of his Salmonella bacteremia, oral voriconazole for dual coverage of his disseminated Histoplasmosis and his Cryptococcal meningitis, as well as clarithromycin and ethambutol for his disseminated MAC.

Discussion The diagnosis of common and uncommon diseases in the immunosuppressed HIV patient can be at times difficult to establish. Diagnostic reasoning tools such as Occam’s razor frequently do not apply, as in this case above. For the immunosuppressed HIV patient, often a low threshold for a broad and thorough evaluation is necessary for the correct diagnosis of disease and appropriate treatment.

THE GREAT IMITATOR STRIKES AGAIN: SYPHILIS

Case Report We describe a case of a 2 month old with persistent skin rash, multiple lytic skeletal lesions, and severe anemia. The presentation included a broad differential including malignancy (Langerhans cell histiocytosis – LCH) but ultimately was found to be congenital syphilis, a venereal disease which in its early stages mimics several diseases.

The healthy, full-term infant presented to an emergency department with a 3-week history of swelling and erythema of the labia and perilan area with several scattered non-draining pustules. The rash was associated with maculopapular lesions over the hands and feet and desquamating lesions on her palms and abdomen. Patient was noted to be increasingly agitated but without fevers, weight loss, neurological changes or changes to urine or stool output.

A complete blood count showed a hemoglobin of 5.0 g/dL, requiring several blood transfusions, reticulocyte count of 2.7%, a decreased RBC count at 1.7 M/ul, and no abnormalities of platelets or leukocytes. Electrolytes and hepatic function panel were unremarkable. Due to concern for neglect/abuse, a skeletal survey was performed which showed multiple left-sided lytic lesions, specifically left acromion and left distal radius lesions, healing fracture of left distal tibial metaphysis, along with an L4 compression fracture. Patient was admitted to the oncology service due to concern for LCH. Shortly after admission, patient became febrile, though a septic work-up was unremarkable, including normal cerebrospinal fluid. Several services were consulted throughout her stay, including infectious disease and dermatology. Rapid plasma reagin (RPR) and a punch biopsy of the lesions were obtained. RPR returned reactive at 1:128 (normal: non-reactive), and confirmatory testing with fluorescent treponemal antibody absorption (FTA-ABS) test was positive. Numerous spirochete organisms were identified on skin biopsy.

With the confirmation of congenital syphilis, the patient completed a 14-day course of penicillin. The skin manifestation improved quickly and significantly. Follow up 2 months after treatment revealed an RPR of 1:32 with no further clinical signs of syphilis infection. Upon review, mother disclosed having a genital rash and limited prenatal care not allowing for standard of care infectious testing.

Congenital syphilis can have such varied presentations which allows for mimicry of several other diseases, including malignancies such as LCH. It is important to include a wide differential of diagnoses when evaluating an infant with a rash.

Inflammation

Concurrent session

1:00 PM

Saturday February 12, 2022

DOES SURFACANT PROTEIN A HAVE A ROLE IN NEUROINFLAMMATION?

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Purpose of Study The role of surfacant protein A (SP-A) in pulmonary immunity and attenuation of inflammation is well-established. SP-A has also been shown to modulate inflammation at extrapulmonary sites using various models of inflammatory disease. Expression of SP-A has previously been reported in rat and human brain. We hypothesized that SP-A may act as an immunomodulatory protein to attenuate inflammation in the neonatal mouse brain.

Methods Used mRNA isolated from wildtype (WT) and SP-A knockout (SP-A⁻/⁻) C57BL/6 mice was subjected to RT-PCR analysis (50 cycles) to detect SP-A expression in both brain and lung tissue. Two models of neonatal brain inflammation were used in postnatal day 7 (P7) WT and SP-A⁻/⁻ neonatal mice: sepsis and hypoxic-ischemic encephalopathy (HIE). For the sepsis model, lipopolysaccharide (LPS) or saline (as control) was intraperitoneally (IP) injected. For the HIE model, pups underwent unilateral common carotid artery ligation or sham surgery followed by exposure to systemic hypoxia. Pups were euthanized 24 hours following injection or surgery, and mRNA was isolated from brain tissue. Cytokine expression (CXCL1, IL-1β, IL-6, TNF-α, and IL-10) was then determined by real-time quantitative RT-PCR analysis. Finally, exogenous purified human SP-A was administered intranasally to P7 WT and SP-A⁻/⁻ neonatal mice once daily for three days, followed by IP LPS. Pups were again euthanized 24 hours following injection, and mRNA was isolated from brain tissue. Cytokine expression was determined by real-time qRT-PCR analysis.

Summary of Results While expression of SP-A mRNA was detected in lung tissue of WT mice, it was not detected in the lungs of SP-A⁻/⁻ mice nor in the brains of either WT or SP-A⁻/⁻ mice. At 24 hours post-LPS injection, expression of all pro-inflammatory cytokine mRNA was increased in the brain compared to saline injection in both WT and SP-A⁻/⁻ mice. Expression of all pro-inflammatory cytokine mRNA was significantly increased in the brains of SP-A⁻/⁻ mice compared
with WT mice at 24 hours following LPS injection, and at 24 hours following HIE surgery. However, cytokine mRNA expression following LPS injection was not changed by pre-treatment with intranasal SP-A.

Conclusions Contrary to previous research, we could not detect SP-A expression in murine brain tissue. Despite this finding, neonatal mice deficient in SP-A showed significantly greater cytokine expression in the brain compared to neonatal WT mice following exposure to LPS. The same finding of increased cytokine expression in neonatal SP-A–/- mice was demonstrated following the HIE model. Inflammation due to LPS injection was not diminished by intranasal administration of human SP-A, however, the efficacy of nasal administration of SP-A was not determined. These results suggest that SP-A–/- mice are more susceptible to neuroinflammation than WT mice, thus supporting the original hypothesis that SP-A attenuates inflammation in the neonatal mouse brain.

#551 DIAGNOSIS OF ACUTE APPENDICITIS IN CHILDREN: A STRATEGY USING ADVANCED AI CLASSIFICATION METHODS

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Purpose of Study In childhood, appendicitis is the most common cause of abdominal pain. However, there are still numerous areas of controversy in the workup of suspected appendicitis regarding diagnostic imaging modalities. Ultrasound (US) is often the first choice due to its lack of ionizing radiation but is more operator-dependent and less sensitive than CT particularly in the setting of childhood obesity which is a serious rising health problem in the United States. Our goal was to develop a tool to select the most accurate and timely modality (US vs. CT) for the correct diagnosis of children with right lower quadrant abdominal pain based on AI classification models taking into account body habitus.

Methods Used This is an IRB-approved retrospective study of 1111 pediatric patients with a history of appendicitis-like symptoms. Patients that underwent both CT and US were included in the study (N=396). Demographic and clinical information such as age, BMI, gender, Alvarado score were collected. Anthropometric measurements such as waist circumference (WC) and sagittal abdominal diameter (SAD) were measured. Different approaches were implemented in Python to select the best modality to diagnose appendicitis using: (1) bivariate analysis, which involved body mass index (BMI) and SAD and, (2) multivariate analysis, which included age, gender, BMI, Alvarado score, WC and, SAD. The models implemented underwent logistic regression (LR), K-nearest neighbors (K-NN), support vector machine (SVM), Naïve Bayes (NB), decision tree (DT) and, random forest (RF). The full cohort was split into a training set (which included a validation subset) and test set for the algorithms. Diverse training sets to test set ratios were tested and compared. The evaluation of the AI models was based on their prediction accuracy (acc) of the imaging modality that had a correct diagnosis of appendicitis.

Summary of Results In this study, all AI classification models (except NB) had moderate to good predictive accuracy (acc>0.60) in the bivariate analysis when the train/test ratios equal to 0.90/0.10 and 0.95/0.05 were used. In addition, DT and RF had a strong predictive accuracy (acc=1.0 and 0.80, respectively) in the multivariate analysis for train/test ratio equal to 0.95/0.05 as shown in table 1.

Conclusions Advanced AI classification methods allow the precise selection of the most appropriate diagnostic modality, avoiding the possible impact of multimodality imaging on cost-effective and time-efficient care and mitigating the risk of complications in the initial evaluation of suspected pediatric appendicitis.

#552 CALCINEURIN INHIBITOR PAIN SYNDROME: THE ONSET AND DISTRIBUTION OF PAIN

1H Rajasekaran*, 1M Duggan, 2C Edwards. 1The University of Queensland Ochsner Clinical School New Orleans, New Orleans, LA; 2Ochsner Medical Center – New Orleans, New Orleans, LA

Case Report Calcineurin inhibitors (e.g. tacrolimus, cyclosporine) function as immunosuppressants, and are integrated into the management of a kidney transplant recipients. Calcineurin Inhibitor Pain Syndrome (CIPS) is an uncommon adverse effect amongst patients on calcineurin inhibitors.

Patient Report A 35-year-old female underwent a second kidney transplant in April 2021 due to end stage renal disease, and immediately placed on tacrolimus for maintenance immunosuppression. On post-operative day 8, the patient complained of severe diffuse pain with superimposed focal pain with joint manipulation. Extensive workup was undertaken, in which NM Bone Scan (refer to Fig 1.0) showed abnormal rise in radioactive uptake in the shoulders, elbows, and knees. Combination of the presentation and workup, made CIPS the most plausible diagnosis. Removal of tacrolimus yielded complete resolution of pain within 4 days.

Discussion Three key points identified: (1) CIPS is known to affect bilateral lower extremity pain, but for this patient the pain was primarily distributed through her jaw, shoulders and wrists, (2) The onset of CIPS has been known to occur between 3 weeks and 14 months; however, this patient developed signs of CIPS on post-op day 8, (3) Following CIPS diagnosis, the patient was transitioned from tacrolimus to cyclosporine, which was tolerated well. Not much has been reported on tolerance of tacrolimus versus cyclosporine amongst CIPS patients.

Conclusion This report demonstrates that while CIPS is not unheard of, much is still to be understood. The case challenges the current understanding on clinical presentation of CIPS and pathophysiology. It highlights an unusual

### Abstract #551 Table 1 AI classification models accuracy

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Abstract #552 Figure 1 NM bone scan – whole body. The image shows increased radioactive uptake within the epiphysis of the shoulder, elbows, and knees.

A 32-year-old female with past medical history of girdle dystrophy presented with idiopathic eosinophilic myositis due to likely limb girdle muscular dystrophy (LGMD). In this case report, we present a patient with idiopathic eosinophilic myositis due to likely limb girdle dystrophy.

A 30-year-old male with no prior medical history was initially seen by orthopedic surgery for right knee pain. Labwork was notable for elevated LFTs and mild eosinophilia prompting referral to Infectious Diseases identified an elevated creatinine kinase (CK) of ~8800 U/L. Initial rheumatology evaluation identified subtle proximal muscle weakness. MRI of right femur was obtained which demonstrated fatty atrophy of numerous muscles along with evidence of muscular edema on STIR images. Muscle biopsy identified multifocal sparse endomysial and perivascular chronic inflammatory cell infiltrates with infiltrating eosinophils. Myositis specific and associated autoantibodies were negative. He was started on high dose prednisone in November 2020, but CK levels remained unchanged 6 weeks later. The patient reported progressive lower extremity weakness and no sustained benefit from physical therapy. Methotrexate was added in December 2020 and monthly intravenous immunoglobulin (IVIg) in January 2021 without clinical improvement. Due to eosinophilic infiltrates on biopsy, genetic analysis for possible limb girdle muscular dystrophy was performed which showed calpain3 gene mutation associated with LGMD2A. Neuromuscular Neurology evaluation in Spring 2021 concluded that his manifestations were due to LGMD2A and he was referred to a multi-disciplinary muscular dystrophy center for comprehensive care.

EAMs are characterized by eosinophilic infiltrates in skeletal muscles, usually in the absence of causative culprits such as parasitic infections, drugs, or malignant diseases. Epidemiologic data is lacking in this rare condition which presents a diagnostic dilemma since the heterogenous nature of EAMs could present either as benign and isolated process or it could present as a life altering insidious process such as LGMD. This patient’s clinical course demonstrates this point as the patient did not improve on prednisone, methotrexate, or IVIg for presumed inflammatory myositis. Genetic testing identified mutations in classic genes associated with LGMD, which can present similar to inflammatory myositis. No definitive treatments exist for LGMD with long term goal being to optimize quality of life. Myositis mimics such as LGMD should remain in the differential diagnosis in patients with atypical muscle biopsies or who are treatment refractory. A timely diagnosis would allow patients to receive care at neuromuscular disorder centers and prevent unnecessary exposure to immunosuppressants.

Abstract #553 UNIQUE PRESENTATION OF EOSINOPHILIC MYOSITIS IN A HEALTHY MALE

S Singh*, I Ward, Dwight David Eisenhower Army Medical Center, Fort Gordon, GA
10.1136/jim-2022-SRMC.556

Case Report Eosinophilic-Associated Myopathies (EAMs) are a group of conditions consisting of 3 subtypes which have heterogeneous clinical and pathological manifestations. These conditions can manifest from local to systemic symptoms to even death. A form of EAM is associated with mutation of the calpain-3 (CAPN3) gene typically identified with limb girdle muscular dystrophy (LGMD). In this case report, we present a patient with idiopathic eosinophilic myositis due to likely limb girdle dystrophy.

A 20-year-old male referred to orthopedics surgery for right knee pain. Labwork was notable for elevated LFTs and mild eosinophilia prompting referral to Infectious Diseases identified an elevated creatinine kinase (CK) of ~8800 U/L. Initial rheumatology evaluation identified subtle proximal muscle weakness. MRI of the right femur was obtained which demonstrated fatty atrophy of numerous muscles along with evidence of muscular edema on STIR images. Muscle biopsy identified multifocal sparse endomysial and perivascular chronic inflammatory cell infiltrates with infiltrating eosinophils. Myositis specific and associated autoantibodies were negative. He was started on high dose prednisone in November 2020, but CK levels remained unchanged 6 weeks later. The patient reported progressive lower extremity weakness and no sustained benefit from physical therapy. Methotrexate was added in December 2020 and monthly intravenous immunoglobulin (IVIg) in January 2021 without clinical improvement. Due to eosinophilic infiltrates on biopsy, genetic analysis for possible limb girdle muscular dystrophy was performed which showed calpain3 gene mutation associated with LGMD2A. Neuromuscular Neurology evaluation in Spring 2021 concluded that his manifestations were due to LGMD2A and he was referred to a multi-disciplinary muscular dystrophy center for comprehensive care.

EAMs are characterized by eosinophilic infiltrates in skeletal muscles, usually in the absence of causative culprits such as parasitic infections, drugs, or malignant diseases. Epidemiologic data is lacking in this rare condition which presents a diagnostic dilemma since the heterogenous nature of EAMs could present either as benign and isolated process or it could present as a life altering insidious process such as LGMD. This patient’s clinical course demonstrates this point as the patient did not improve on prednisone, methotrexate, or IVIg for presumed inflammatory myositis. Genetic testing identified mutations in classic genes associated with LGMD, which can present similar to inflammatory myositis. No definitive treatments exist for LGMD with long term goal being to optimize quality of life. Myositis mimics such as LGMD should remain in the differential diagnosis in patients with atypical muscle biopsies or who are treatment refractory. A timely diagnosis would allow patients to receive care at neuromuscular disorder centers and prevent unnecessary exposure to immunosuppressants.

Abstract #554 THE EFFECTS OF CORTICOSTEROIDS ON FATALITIES AND HOSPITALIZATION DURATIONS AMONG COVID-19 HISPANIC POPULATION

TK Lumbreras*, F Dihovm. Texas Tech University Health Sciences Center El Paso Paulo L Foster School of Medicine, El Paso, TX
10.1136/jim-2022-SRMC.557

Purpose of Study Current literature shows that dexamethasone is an effective drug to reduce respiratory failure in COVID-19 patients. However, less is known about the effectiveness of dexamethasone, prednisone, and other glucocorticoids on COVID-19 patients with multiple comorbidities like diabetes, hypertension, and obesity. Therefore this retrospective chart review examines the effects of glucocorticoids on Hispanic COVID-19 positive patients. The purpose of this study is to examine the health outcomes of COVID-19 Hispanic patients treated with glucocorticoids.

Methods Used This retrospective chart review examined 1039 patients medical charts from January 2020 to May 2021. The inclusion criteria met for all 1039 patients consisted of, adults >18years, Hispanic ethnicity, positive COVID-19, and inpatient status. Data was divided into various groups given corticosteroid treatment, specifically focused on prednisone and dexamethasone to compare differences in patient outcome rates (mortality, mechanical ventilation, O2 required on discharge). All statistical analysis and data management was conducted using Stata V17.

Summary of Results Mortality outcome: Patients prescribed dexamethasone only (N=656) had a higher mortality rate (24.43%) compared to patients prescribed prednisone only (13.24%, p-value <0.001). Patients given no steroids (N=160) had a similar mortality rate (24.36%) compared to...
patients given dexamethasone only (N=656, 24.43%), both no steroids and dexamethasone only groups had higher mortality rates compared to prednisone only (13.24%, p-value <0.001). Patients prescribed both prednisone & dexamethasone (N=155) had a lower mortality rate (10.32%) compared to patients prescribed prednisone only (13.24%, p-value <0.001).

**Mechanical Ventilation Outcome:** Patients prescribed dexamethasone only (N=656) had a higher rate of mechanical ventilation use (23.17%) compared to patients prescribed prednisone only (11.76%, p-value <0.001). Patients prescribed both prednisone & dexamethasone (N=155) had a lower mechanical ventilation use rate (8.39%) compared to patients prescribed prednisone only (11.76%, p-value <0.001).

**Hospitalized to wards/ICU Outcome:** Using logistic regression analysis, patients prescribed dexamethasone only (N=656) were 2.8 times more likely to be transferred to an ICU unit compared to those who were prescribed prednisone only (N=68, p=0.001). Patients who did not receive corticosteroids (N=160) had 4 times higher odds of being transferred to the ICU compared to prednisone only (N=68, p-value <0.0001).

**Conclusions** Current literature shows that dexamethasone is the glucocorticoid of choice to reduce COVID-19 patients respiratory complications. However, the results of this study show that prednisone may be more effective in reducing mortality, mechanical ventilation use, and admission to wards/ICU. Nonetheless, this study highlights the need for more studies done examining which glucocorticoids are effective at reducing COVID-19 complications.

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**Abstract #555 Figure 1** Painful hyperpigmented indurated ulcers with necrotic edges of the lower right extremity

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**Abstracts**

**Case Report** A 32-year-old female with past medical history of SLE and Lupus Nephritis ISN/RPS Class II and V presented with multiple painful leg ulcers. The patient first noticed bumpy nodules on her right lower leg a few months prior which progressively became painful over several weeks. The ulcers exhibited multiple indurated hyperpigmented lesions of varying sizes which were exquisitely tender to touch. Laboratory investigations showed normal renal function, calcium, phosphorus, vitamin D, PTH, and complement but did have chronically elevated anti-double strand DNA antibody despite immunosuppression with azathioprine 2 mg/kg daily and prednisone 10 mg daily at baseline. Of note, she previously was intolerant to hydroxychloroquine and mycophenolate due to central vision loss and allergic rash, respectively. Initial biopsy suggested lupus profundus. Her prednisone dose was increased to 1 mg/kg daily but the ulcers rapidly progressed. Dapsone and antibiotics were added but were unsuccessful. She was referred to the hospital after the ulcerations began to appear necrotic with purulent drainage (figure 1). A second biopsy was obtained, revealing cutaneous ulceration, fibrin thrombi in dermal vessels and calcium deposits in subcutaneous tissue. Nonuremic calciphylaxis (NUC) was diagnosed and 25 grams of Sodium Thiosulfate IV was given but was intolerant due to severe GI symptoms. Rituximab 1000 mg IV for 2 doses 14 days apart was given as a salvage effort with gradual healing of the ulcers.

NUC is a rare and debilitating condition with mortality rate up to 52% within the first year of diagnosis [1]. The painful skin lesions present indurated, hyperpigmented, and typically involve the lower extremities. Histologically, calcifications in the medial layer of arterioles and intimal fibrosis are seen, confirming the diagnosis. Connective tissue diseases account for 11.1% of cases [1]. There are only a few case reports describing the onset of NUC in patients with autoimmune disease who have been on chronic immunosuppression via corticosteroids [2]. In our case, she was on varying doses of prednisone for seven years. Currently wound care, pain control and treating the underlying disease is the mainstay of therapy.

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**Case Report** Multisystem inflammatory syndrome in children (MIS-C) typically presents with fever and multisystem dysfunction following infection with SARS-CoV-2. Per CDC guidelines, MIS-C can be diagnosed when an individual less than 21 years of age presents with fever, laboratory evidence of inflammation, and multisystem organ involvement requiring hospitalization with no alternative diagnosis and evidence of current or prior COVID-19 infection. Systems are categorized as either cardiac, renal, respiratory, hematologic, gastrointestinal, dermatologic, or neurological. Otolaryngologic is not a designated system. However, atypical presentations of MIS-C involving the deep neck have been reported. Specifically, cases of children with retropharyngeal pathology, including edema and phlegmon, have been described.

Our report highlights a case of deep neck infection as the initial presentation of MIS-C. A 12-year-old male was admitted to the pediatric hospital medicine service for medical management of a moderately large retropharyngeal phlegmon/abscess confirmed by computed tomography (CT) scan. Otolaryngology team was consulted, and surgical intervention was
not recommended. The patient was started on empiric intravenous (IV) antibiotic treatment with ceftriaxone and vancomycin. After two days of antibiotics, he showed minimal improvement. On physical exam, he continued to have neck pain, tenderness to palpation on the left neck inferior/posterior to the left ear, mild edema, and limited lateral range of motion due to pain. Repeat CT scan of his neck also showed minimal improvement of pleural effusion.

During admission, he developed bilateral non-exudative conjunctivitis, erythematous lips, mild erythema over his palms, abdominal pain, and cough, with a worsening fever curve while on broad spectrum antibiotics. At this time, differential diagnosis was broadened to include viral syndrome, MIS-C, and atypical Kawasaki Disease. Respiratory viral panel (including COVID-19) was negative. Inflammatory markers were elevated, including CRP of 26.6 mg/dL, ESR of 64 mm/hr, and Pro-BNP of 1,908 pg/mL. Ultimately, the patient met criteria for MIS-C: less than 21 years old, presence of fever, elevated inflammatory markers, multisystem involvement, and positive COVID-19 antibody. Treatment was initiated for moderate-severe MIS-C with IV immunoglobulin (IVIG) infusion, aspirin, IV methylprednisolone, and omeprazole prophylaxis.

The patient clinically improved after IVIG infusion, and antibiotics were de-escalated to oral Augmentin for a total duration of 14 days of antibiotic therapy. He was discharged on aspirin, a prednisone wean, and omeprazole with Cardiology outpatient follow-up established.

MIS-C is a novel syndrome that can have unique presentations. Clinicians should consider MIS-C when a febrile patient being treated for infection does not improve with standard therapies and have a low threshold to initiate MIS-C evaluation if new symptoms involving other organ systems develop.

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**Abstracts**

**#558** CHALLENGING PRESENTATION OF STILL’S DISEASE AS A DIAGNOSIS OF FEVER OF UNKNOWN ORIGIN (FUO)

M Faragallah*, E Elgwairi, MA Elmassry, S Sanchez, K Nugent. Texas Tech University Health Sciences Center, Lubbock, TX

10.1136/jim-2022-SRMC.561

**Case Report**

The incidence of true Fever of Unknown Origin (FUO) in our practice has decreased with advancements in diagnostic technologies. We can now identify many causes of diseases that once led to a diagnosis of FUO, such as infective endocarditis with a difficult-to-isolate organism using advanced microbiological studies. Establishing a cause of fever can be more challenging when the disease entity is a diagnosis of exclusion. We describe a case of a young woman who presents with a FUO who was finally diagnosed with Still’s disease.

**Case presentation**

A 29-year-old woman presented to the ER with 11 days of fevers up to 104°F, nausea, vomiting, body aches, chills, and RUQ pain. She was started on antibiotics during her hospitalization, but she continued to spike fevers. Initial workup showed elevated inflammatory markers (ferritin 487 mg/mL, CRP 30.5 mg/dL, ESR 130 mm/hr), and CBC showed leukocytosis, RBC nadir value at 2.82 milliliters/µL, Hb&HCT nadir values at 7.9 gm/dL & 25% respectively, PLT 425 K/µL. Blood cultures were negative for bacteria, and fungal blood cultures had no growth in 30 days. Her chest X-rays are normal; her abdominal imaging included an US which showed hepatomegaly followed by a dedicated CT imaging w/wo contrast which revealed mild hepatosplenomegaly and retroperitoneal lymphadenopathy. No cholecystitis on
Hepatobiliary nuclear medicine scan. Magnetic resonance imaging of the head and neck was normal. Genetic workup revealed normal FISH studies for BCL/ABL/ASS1 plus translocation dual fusion probe (CML) panel. Bone marrow analysis was negative for hematologic malignancies; although showed slight hypercellularity with mild to moderate fibrosis. NK activity was normal which decreased the likelihood of Hemophagocytic Lymphohistiocytosis. Peripheral smear analysis revealed normocytic/normochromic anemia. IL2R alpha (CD25) soluble elevated at 2673 pg/ml. ANA was negative. Echocardiogram was normal. The workup suggested a diagnosis of adult-onset Still’s disease (AOSD). Rheumatology recommended discharging on prednisone 30 mg daily.

Discussion AOSD is a rare auto-inflammatory disease that commonly presents as FUO. Clinical features include fever (quosidian or double quosidian), rash, and arthritis or arthralgia. Severe nonsuppurative pharyngitis is common. Hepatosplenomegaly and lymphadenopathy are common. Lab abnormalities usually show elevated inflammatory. CBC usually shows normocytic/normochromic anemia and reactive thrombocytosis. Although the fraction of undiagnosed FUO has dropped significantly between the 1930s and 1950s, it has been steadily increasing since then. It is vital to keep a high index of suspicion for such cases, as an extensive detailed workup might reveal a manageable diagnosis. Significant resources would probably be saved in the future, even though the initial workup might be of a relatively large cost.

##559  STEVENS-JOHNSON SYNDROME/TOXIC EPIDERMAL NECROLYSIS IN THE SETTING OF CIRRHOSIS


10.1136/jim-2022-SRMC.562

Introduction Stevens-Johnson syndrome/toxic epidermal necrolysis is an adverse mucocutaneous reaction that is thought to be mediated by T cells. The reaction can have triggers including but not limited to medications, pathogens, and genetics. Withdrawal of the offending agent and supportive treatment remain the standard of care. Prompt diagnosis and specialized involvement is imperative to improve mortality.

Case A 62 year old woman with a past medical history of hypertension and cirrhosis secondary to alcohol use presented to the Emergency Department complaining of dysphagia, oral discomfort, and a skin rash for 2–3 days. One month prior to admission, the patient was treated for cirrhosis and a urinary tract infection. She received ceftriaxone and was discharged with spironolactone, furosemide, and propranolol. On physical exam, the patient had skin sloughing of the anterior and posterior thorax, upper bilateral arms, abdomen, vulva, and oral mucosa. Her labs were significant for pancytopenia, and elevated lactate acid, ammonia, and HSV1/2 antibody titers. The patient was admitted to the MICU, and multiple subspecialists were consulted. A biopsy consistent with SJS/TEN was obtained. She was initially treated with cyclosporine, morphine, and fluids. The patient’s medications from her previous admission were held in the absence of a causative agent. The patient developed acute renal failure on day 3 of hospitalization that was attributed to progression of her lesions and loss of intravascular volume secondary to cirrhosis. Additional fluids were administered with albumin in an attempt to mitigate intravascular loss. She became edematous, had increased ascites and her kidney function worsened; the cyclosporine was discontinued. She progressively became more encephalopathic and hypoxic as a result of her decompensated liver cirrhosis. Despite therapy with ethacrynic acid, lactulose and rifaximin, the patient’s status continued to decline. Her mental status worsened, and her cirrhosis made fluid management difficult. The patient’s blood pressure continued to drop, and her cutaneous involvement made her a poor candidate for a central line. The patient succumbed to her illness on day 7 of her hospitalization.

Discussion SJS, SJS/TEN, and TEN are T cell-mediated mucocutaneous reactions of the same disease spectrum that are separated by severity. Immediate intervention is essential to reduce mortality. The efficacy of various treatments of SJS/TEN, such as corticosteroids, TNF-α antagonists, plasmapheresis, IVIG, and cyclosporine, remains debatable. However, removal of the suspected offending agents and supportive care, such as fluids, nutrition, pain control, and hygiene are absolutely necessary to reduce morbidity and mortality. Patients presenting with co-morbidities, such as cirrhosis, make basic supportive care difficult and can negatively impact the outcome of this disease.

Medical education, medical ethics and advocacy

Concurrent session

1:00 PM

Saturday February 12, 2022

##560  THE IMPACT OF IMPLEMENTING AN X+Y CURRICULUM IN A PEDIATRIC RESIDENCY PROGRAM: A FOCUS GROUP STUDY

J Sahil*, G Hallford, C Hester. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

10.1136/jim-2022-SRMC.563

Purpose of Study Well-being is an important topic in graduate medical education, with many residency programs seeking novel ways to improve both faculty and trainee well-being. One such method involves an alternative approach to the traditional rotation model for primary care residencies. The ‘X +Y’ model, first implemented in Internal Medicine programs, has demonstrated improvement in resident education, continuity, and ability to manage inpatient and outpatient responsibilities. 1–2 Use of the X+Y model in Pediatrics is in its infancy, with participating programs requiring membership in the Advancing Innovation in Residency Education (AIRE) study through the Accreditation Council on Graduate Medical Education. Our Pediatric Residency Program joined the Pediatric AIRE study in July 2020, year 3 of the study. The goal of this focus group study was to determine resident perception of the impact of the X+Y schedule change using a qualitative approach.

Methods Used Eligible participants included the program’s second- and third-year residents who experienced both the prior schedule structure and the new X+Y model.
Approximately one year following implementation of the X + Y model, three focus groups of 4–6 residents were conducted by an experienced facilitator not related to the program (total N=15). The same ten questions were posed to each focus group. Focus group meetings were recorded and transcribed, then de-identified by the facilitator. Analysis of the three focus groups’ responses by two independent reviewers were reconciled.

**Summary of Results** The following positive themes were identified: (1) Improved schedule predictability, (2) Reduced stress with scheduled Y week break between inpatient rotations, and (3) Improved outpatient continuity. The only negative theme was the reduced number of residents available on inpatient services.

**Conclusions** Overall, participants endorsed continuing the X + Y model. Continued research and objective measures are needed to further evaluate the short- and long-term impact of changing to an X+Y model in Pediatric Residency training programs.

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**#561 SOCIAL DETERMINANTS OF HEALTH CURRICULUM FOR PEDIATRIC CLERKSHIP STUDENTS**

C Roth*, A Prudhomme. LSU Health New Orleans, New Orleans, LA

10.1136/jim-2022-SRMC.564

**Purpose of Study** Medical education literature demonstrates that case based curricula improve learner knowledge and skills regarding Social Determinants of Health (SDH). While education on SDH aligns with the standards set by the Liaison Committee on Medical Education and Council on Medical Student Education in Pediatrics, current resources have limited generalizability to the pediatric clerkship. To address this need, we designed a case based curriculum on SDH for third year medical students on their pediatric clerkship.

**Methods Used** The curriculum consists of four flipped classroom modules, delivered via interactive electronic presentations, on SDH for common pediatric diagnoses. Students complete modules prior to each of four small groups. During small groups, a facilitator leads students in analyzing a pediatric case for potential SDH and constructing questions that could be asked to elicit these SDH from patients and families. Students also research a local resource that could help mitigate SDH for a pediatric patient and present their findings.

Data collection occurs via students’ analysis of a pediatric case and self-assessment of their knowledge and skills regarding SDH in the pediatric context on a 7-point Likert scale (ranging from strongly disagree to strongly agree) before and after completion of the curriculum.

**Summary of Results** The following positive themes were identified: (1) Improved schedule predictability, (2) Reduced stress with scheduled Y week break between inpatient rotations, and (3) Improved outpatient continuity. The only negative theme was the reduced number of residents available on inpatient services.

**Conclusions** Overall, participants endorsed continuing the X + Y model. Continued research and objective measures are needed to further evaluate the short- and long-term impact of changing to an X+Y model in Pediatric Residency training programs.

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**#562 IMPROVING PARENT PROVIDER COMMUNICATION FOR STRESSED-UPSET PARENTS**

J Boccuzzi*, R Mehta. Augusta University, Augusta, GA

10.1136/jim-2022-SRMC.565

**Purpose of Study** Parents of sick children can be stressed, become upset or angry, and may not listen to rationalized conversation. Appropriate communication during that stressful time between healthcare providers and parents is essential.
for providing best care to the patients and preventing burn-out among Providers. Medical students and residents (Trainees) learn these skills during actual patient care at bedside but this is not enough to adequately prepare during an actual crisis. This study aims to provide a framework for future medical education curriculum to better prepare trainees for handling high stress conversations with parents of pediatric patients.

Methods Used Trainees rotating through Pediatrics were enrolled to participate in an asynchronous online course requiring completion of a scenario using Patient Family Centered Care (PFCC) communication skills and values. They completed a pre-survey questionnaire about their current behaviors when interacting with pediatric parents, followed by interacting with an upset parent in a simulated scenario. An 11-item standardized assessment tool based upon PFCC values of their interaction was completed by an independent observer. Participants also completed a post-survey evaluation of the course.

Summary of Results So far, 56 participants have completed the course. The average items completed on standardized assessment tool were 8/11, whereas only 7 participants completed all items. Overall majority were able to have a decent conversation to calm the parent during the simulation. 100% participants gave full attention and 98% expressed sympathy to parent's concern. However, only 63% of participants struggled to suggest getting help from relatives, friends, or chaplain, etc. The average rating for quality of the course was 4.6/5 and majority found the course to be relevant to their training (4.9/5).

Conclusions Trainees found the course in handling of distressed/upset parents very useful. This study demonstrated that healthcare providers can be trained to communicate with stressed or angry parents/patients with the help of this curriculum. The incorporation of this course into medical school or residency curriculum can help develop important communication skills to aid in handling stressful situations in their future careers as physicians.

#563 ‘WHAT’S IN A SHAME’ IMPROVING TIMELY COMPLETION OF CLERKSHIP EVALUATIONS WITH QI

MD Vetars*, B May, EO Schmit, C Wu, S Berger. The University of Alabama at Birmingham School of Medicine, Birmingham, AL

Purpose of Study Evaluations of medical students on their pediatric clerkship are essential for feedback, clerkship grades, and Medical Student Performance Evaluation.1,2 The best feedback is timely, specific, and actionable, yet completion of evaluations by attendings has challenging.1–4 We aim to increase the percentage of student evaluations completed by pediatric hospital medicine (PHM) attendings within 14 days of assignment to 75% through quality improvement (QI) interventions over a one-year period.

Methods Used PHM division focus groups led to the following interventions: providing individual and divisional baseline data, standardizing evaluation assignment, giving quarterly data with recognition awards, and announcing incomplete evaluations weekly. Our primary outcome is percentage of evaluations completed within 14 days. Balancing measures will include a word count of narrative comments and honors designation.

Abstract #563 Figure 1

Routine statistical analysis will be performed, and proportions will be analyzed using a chi-squared test. Focus groups will reconvene post project.

Summary of Results Baseline data from May 2019 to December 2020 shows PHM completed 45% of evaluations within 14 days of assignment. Low priority and evaluation availability were the greatest barriers to timely completion. While data collection is on-going, there has been improvement to 86% over the last 5 months. Balancing measures of word count and honors designation are being analyzed.

Conclusions Data to date is promising that QI interventions are an effective and practical way to improve timely completion of pediatric clerkship evaluations. We postulate that publicly identifying attendings who have incomplete evaluations at weekly meetings encourages quick completion. Future directions may explore generalizability to other specialties and institutions and evaluate positive vs negative (i.e. public ‘shaming’ vs praise) reinforcement as academic motivators.

#565 IMPROVING PEDIATRIC TRAINEES’ KNOWLEDGE OF DISASTER MEDICINE

AR Donahue*, J Loberger, S Brown, S Duening. 1The University of Alabama at Birmingham, Birmingham, AL; 2East Tennessee State University, Johnson City, TN

Purpose of Study Although a quarter of the world’s population is under the age of five, children account for half of the victims of man-made and natural disasters. Children are among the most vulnerable populations in disasters due to unique physiologic, psychologic, and developmental determinants. Pediatricians must ensure that disaster preparedness planning at the local, regional, and national levels is tailored to the requirements of children and adolescents. Although Pediatric Disaster Medicine (PDM) training is an Accreditation Council for Graduate Medical Education (ACGME) requirement for Pediatric Emergency Medicine fellows, PDM is no longer a required component of pediatric residency training. To effectively care for children in the context of disasters, pediatricians should be trained in a curriculum with didactic and experiential learning with structured debriefing. Since training in PDM is neither required nor standardized for pediatric residents, the authors designed and integrated a PDM course into the curriculum of a pediatric residency program and assessed
if participation increased participants’ knowledge and comfort of managing disaster victims.

**Methods Used** The authors adapted and incorporated a previously studied PDM course into a pediatric residency program. The curriculum consisted of didactic lectures and experiential learning via simulation with structured debriefing. A longitudinal series of pre- and post-tests and surveys were used to assess knowledge and attitudes towards PDM.

**Summary of Results** Sixteen eligible residents completed the intervention at a single academic institution. Prior to the course, none of the residents reported experience treating disaster victims. Pairwise comparison of pre- and post-course standardized assessments revealed a 35% improvement in scores immediately after completing the course (95% confidence interval, 22.73%-47.26%; P<.001) and a 23.73% improvement two months later (95% confidence interval, 7.12%-40.34%; P<.01). Prior to the intervention, none of the resident reportedly felt comfortable with providing care during disasters; however, after completing the curriculum, 62.5% of residents felt comfortable with providing care during disasters.

**Conclusions** Residents who completed this course increased their knowledge of PDM with moderate retention of knowledge gained. There was a significant increase in perceived ability to manage patients in a disaster situation following this educational intervention and the residents’ confidence was preserved 2 months later. Future objectives will focus on the development and integration of a disaster medicine curriculum for pediatric residents and fellows in Pediatric Emergency Medicine and Pediatric Critical Care Medicine at a larger academic institution.

**#566 ADVERSE CHILDHOOD EXPERIENCES CURRICULUM FOR PEDIATRIC RESIDENTS: A NEEDS ASSESSMENT SURVEY**

MA Jacob*, J Lees. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

10.1136/jim-2022-SRMC.568

**Purpose of Study** Adverse Childhood Experiences (ACEs) are stressors that occur in childhood that can impact child development and health outcomes for adults. Based on the 2019 Behavioral Risk Factor Surveillance Survey in Oklahoma, 21.1% of the participants had faced 4 or more ACEs in their life. The University of Oklahoma Health Sciences Center (OUHSC) pediatric residency program currently does not have a formalized curriculum to educate residents on ACEs. The purpose of this study was to conduct a needs assessment survey for a formalized curriculum on ACEs in OUHSC that focused on residents’ knowledge in adverse childhood experiences, confidence in practicing trauma informed care, and their preferred mode of education for the training curriculum.

**Methods Used** All data was collected from a single academic medical center. In Fall 2021, we surveyed pediatric and internal medicine/pediatric residents on their confidence with definitions of ACEs and associated terms, comfort discussing and screening for ACEs, and their preference on style of training curriculum. Surveys were distributed via REDCap to 69 residents, the total population of pediatric and internal medicine/pediatric residents at OUHSC.

**Summary of Results** There was a 62% return rate (43 surveys) with comparable return rates from first to third year classes and no significant variation in survey responses with training level. Most residents (93%) felt at least somewhat confident in defining ACEs and 53% felt at least somewhat comfortable discussing what it meant to patients. However, only 35% of residents felt confident defining resilience factors and 70% residents felt slightly or not at all comfortable discussing them with patients. In regards to available screening questionnaires, only 21% of residents were at least somewhat comfortable in finding them while 35% felt comfortable using them. 63% of residents felt not at all comfortable in determining next steps after identifying ACEs. The residents’ preferred mode of curriculum was in person/online lectures with the practical application through focus groups with a trauma informed care professional.

**Conclusions** Our data indicate the need for a formalized curriculum on ACEs as residents do not feel confident in a subject they deem important. While most residents have a limited understanding of ACEs there is still an unmet need on a comprehensive understanding of ACEs and the clinical implementation of it. The curriculum should consider resident preference on mode of didactics and incorporate practical application.

**#567 RESTORATIVE YOGA THERAPY FOR THIRD YEAR MEDICAL STUDENTS IN PEDIATRICS ROTATION: WORKING TO IMPROVE MEDICAL STUDENT WELL-BEING**

CG Thompson*, T Vasilyeva, J Meller, E Shenshen, M Naqui. Texas Tech University Health Sciences Center School of Medicine, Amarillo, TX

10.1136/jim-2022-SRMC.569

**Purpose of Study** Medical education is academically rigorous and time-intensive, leading to emotional and physical strain for students throughout their training. Subsequently, many medical students report experiencing anxiety, depression, and other changes in mood in response to sustained stress. These negative effects on psychological well-being may even precipitate burn-out, a major issue among medical providers, as students enter the workforce. During the third year of medical school, students traditionally transition to a more clinical role for education and to choose a field of medicine, while continuing to study for exams. This period is likely pivotal for establishing long-term coping strategies that can be used throughout their career. One strategy is the implementation of a yoga practice, which works to reduce the stress response and lower the likelihood of anxiety and depression development. This study seeks to measure the effect of a yoga intervention on third-year medical student well-being.

**Methods Used** A restorative yoga practice was offered for third-year medical students on their pediatrics rotation, practicing 45 minutes of yoga once a week for six weeks. 25 students participated over the course of a year, with sessions held virtually due to COVID-19. Screening via the 14-question Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was done before and after the intervention.

**Summary of Results** All but one statement from the WEMWBS showed a positive increase in average rating post-intervention. The statements, ‘I’ve been feeling more relaxed’ and ‘I’ve been thinking clearly’ showed the greatest average increase. Following chi-squared testing, p <.05, two statements were found to be significantly different pre- and post-intervention: ‘I’ve been feeling more relaxed’ and ‘I’ve been feeling good about myself’.
Conclusions Although limited due to small sample size, attrition, and social distancing restrictions, these data indicate that restorative yoga could be an effective mitigator against the stresses of medical education. In particular, our results indicate that yoga is correlated with a positive change in relaxation, mental clarity, and self-esteem. Increasing these qualities during a pivotal time of medical education when students are making important, and potentially anxiety-inducing, career choices could hopefully have enduring benefits for well-being.

Purpose of Study Head Start and Early Head Start (HS/EHS) are federally funded programs that promote children’s development through services that support early learning, health, and school readiness. Frequent well child checks (WCC) during the first years of life put providers in a unique position to introduce early childhood programs. A completed health visit is a requirement for enrollment in HS/EHS. Our study investigated barriers encountered by families, primary care providers, and HS/EHS directors and family advocates in the Oklahoma City region.

Methods Used 86 medical providers at five University of Oklahoma clinics were surveyed as well as 45 HS/EHS directors and family health advocates from 16 HS/EHS sites to assess barriers encountered in completing the health care requirements. Sunbeam Family Services administered an anonymous survey to 275 parents and data was shared with the research team. Data were stratified by resident or faculty status for quantitative and qualitative data were collected and analyzed.

Summary of Results 60% of medical providers responded; 62% were residents, 31% faculty, and 6% nurse practitioners. 80% of providers always/usually ask about childcare during visits; although, only 12% always/usually ask about HS/EHS. 98% of providers would be interested in providing referrals to HS/EHS. 56% of residents were unfamiliar with Early Head Start, vs. 12.5% of non-resident providers (p<.0001). 78% of residents did not know the eligibility criteria, vs. 37% of non-resident providers (p<.003). Completing the health form was burdensome to 24% of providers. 47% of HS/EHS providers responded. 37% of HS/EHS providers always/usually can communicate with the children’s primary care doctor. They also report 64% of doctors in their area always/usually completely filled out the health forms. 82% would also accept copies of a child’s well visit and labs instead of their form. When asked about barriers, the most common response was difficulty scheduling a WCC. 41% of parents surveyed responded. 93% said they rarely/never have trouble finding a doctor for their child. 71% rarely/never have trouble getting an appointment when their child is sick and 92% rarely/never have trouble getting an appointment for a WCC. When asked what makes getting your child to the doctor hard for your family, they reported time away from work 67%, difficulty obtaining an appointment that works with their schedule 39%, transportation 14%.

Conclusions Majority of medical providers routinely ask about child care but not specifically HS/EHS. Many providers are unfamiliar with HS/EHS programs and their requirements, especially residents. Almost all providers want to learn more about HS/EHS. Interestingly, most parents denied difficulty obtaining visits for urgent or well child checks despite that being a perceived barrier by HS/EHS providers. Opportunities for intervention include educating medical providers about benefits and requirements of HS/EHS and options for submitting required health information.

Purpose of Study In 2020, the Pediatrics Department at UTHouston implemented a medical legal partnership (MLP) program to address the social determinants of health (SDoH) that have a health-harming impact on our patients. Healthy People 2030 defines social determinants of health as ‘conditions in the places where people live, learn, work, and play that affect a wide range of health and quality-of-life risks and outcomes’. These factors are important in evaluating the health of our communities as medical care only accounts for 10–20% of modifiable factors contributing to population health. The MLP program addresses health-harming SDoH by providing services from an interdisciplinary team of health and legal providers and training future clinicians on interdisciplinary models that improve healthcare. The future of healthcare requires providers to address SDoH to improve community health.

Methods Used A baseline assessment of pediatric patients’ Safe Environment for Every Kid (SEEK) and MLP questionnaires was performed at 4 UTHouston pediatric clinics located throughout Houston. Families were screened at well-child appointments between June 2020 and April 30, 2021. Forms were then scanned into the patient’s health record and entered into a secure spreadsheet for management and analysis. Social workers were consulted for forms that identified legal needs and made referrals to MLP for further evaluation within 1 week.

Summary of Results Families completed 4213 responses from June 2020 to April 2021. See table 1.

Conclusions Our results show a need for the interdisciplinary services provided by the MLP program. Study limitations include provider knowledge of the referral process and families completing questionnaires. Future plans of this study include evaluating the electronic administration of questionnaires, refining the referral process, and following up on legal outcomes.

REFERENCES
1. Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2021
Abstract #569 Table 1

<table>
<thead>
<tr>
<th>Selected Items from SEEK and MLP questionnaires</th>
<th>No</th>
<th>Yes</th>
<th>% Yes</th>
<th>Total</th>
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<tbody>
<tr>
<td>Does someone smoke at home</td>
<td>3668</td>
<td>366</td>
<td>9.07%</td>
<td>4034</td>
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<tr>
<td>Do you worry that your food would run out before you could buy more?</td>
<td>3836</td>
<td>195</td>
<td>4.84%</td>
<td>4031</td>
</tr>
<tr>
<td>Did the food you bought just not last and you didn’t have money to get more?</td>
<td>3843</td>
<td>179</td>
<td>4.45%</td>
<td>4022</td>
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<tr>
<td>Do you feel that your child is difficult to take care of?</td>
<td>3967</td>
<td>61</td>
<td>1.51%</td>
<td>4028</td>
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<tr>
<td>Do you feel the need to slap or hit your child?</td>
<td>4000</td>
<td>31</td>
<td>0.77%</td>
<td>4031</td>
</tr>
<tr>
<td>Do you need more help with your child?</td>
<td>3765</td>
<td>260</td>
<td>6.46%</td>
<td>4025</td>
</tr>
<tr>
<td>Do you feel under extreme stress?</td>
<td>3808</td>
<td>220</td>
<td>5.46%</td>
<td>4028</td>
</tr>
<tr>
<td>Have you often felt down, depressed, or hopeless?</td>
<td>3846</td>
<td>175</td>
<td>4.35%</td>
<td>4021</td>
</tr>
<tr>
<td>Have you felt little interest or pleasure in doing things?</td>
<td>3818</td>
<td>194</td>
<td>4.84%</td>
<td>4012</td>
</tr>
<tr>
<td>Have you and a partner fought a lot?</td>
<td>3935</td>
<td>62</td>
<td>1.55%</td>
<td>3997</td>
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<tr>
<td>Has your partner threatened, shovved, hit or kicked you or hurt you physically in any way?</td>
<td>3998</td>
<td>8</td>
<td>0.20%</td>
<td>4006</td>
</tr>
<tr>
<td>Thinking about the past 3 months - Have you had 4 or more drinks in one day?</td>
<td>3984</td>
<td>22</td>
<td>0.55%</td>
<td>4006</td>
</tr>
<tr>
<td>MLP: Concerned about income issues (including disability, supplemental security income, social security, debt, medical bills, paying for medications, and WIC (women, infants, and children) benefits)?</td>
<td>206</td>
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<td>MLP: Health insurance coverage or benefits?</td>
<td>155</td>
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</tr>
<tr>
<td>MLP: Losing a job or being at risk for losing a job?</td>
<td>116</td>
<td></td>
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<tr>
<td>MLP: Losing transportation or being at risk for losing transportation over the last 90 days?</td>
<td>60</td>
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<td></td>
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</tr>
<tr>
<td>MLP: Education needs that are not being met?</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLP: Immigration status?</td>
<td>37</td>
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<td></td>
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<tr>
<td>MLP: Custody, guardianship (the legal right to make decisions for person 18 and older), or child support?</td>
<td>37</td>
<td></td>
<td></td>
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<tr>
<td>MLP: Wills, advance directives, power of attorney, or any other form of end-of-life planning?</td>
<td>20</td>
<td></td>
<td></td>
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<tr>
<td>MLP: I do Not have housing</td>
<td>132</td>
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<tr>
<td>MLP: I have housing today, but I am worried about losing housing in the future.</td>
<td>139</td>
<td></td>
<td></td>
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Perinatal medicine II
Concurrent session
1:00 PM
Saturday February 12, 2022

#570 HUMAN MILK-DERIVED LACTALBUMIN-OLEIC ACID
COMPLEXES ARE CYTOTOXIC TO IMMATURE
INTESTINAL CELLS

K Chetta*, D Newton, J Baatz, C Wagner. Medical University of South Carolina, Charleston, SC

10.1136/jim-2022-SRMC.570

Purpose of Study A protein-lipid complex of alpha-lactalbumin (ALA) and oleic acid (OA) named Human Alpha-Lactalbumin Made Lethal to Tumors (HAMLET) has broad cytotoxicity against multiple carcinogenic cell lines. Its activity in primary immature intestinal cell culture is unreported. It was hypothesized that (1) HAMLET is cytotoxic to immature intestine cells and (2) donor human milk (DM) contains similar ALA complexes.

Methods Used The active protein HAMLET was produced from native alpha-lactalbumin (ALA), using an oleic-acid conditioned anion exchange (AE) chromatography column. Cytotoxicity testing was performed via tetrazolium viability assay in two human primary fetal intestinal cell cultures FHs 74 Int and HIEC-6, and human lung carcinoid cells A549. Purity of HAMLET was performed by gel electrophoresis (PAGE), and Western blot. Controls included native ALA and a protein-free buffer. Casein extracted from banked human DM was applied to an AE column. A protein peak eluting after 1.0 M NaCl containing ALA was isolated. Free fatty acids were quantified using high performance liquid chromatography-tandem mass spectrometry (HPLC-MS/MS).
Abstract #570 Figure 1

Summary of Results Doses of HAMLET required to kill 50% of cells in monolculture (LD50) were similar in FHs 74 Int, HIEC-6 and A549 cells (200–250 pg/mL) (figure 1). A dose response was observed after 4 hours between a range of 50 μg/mL to 300 μg/mL. DM casein contained a corresponding peak of ALA protein eluting in near-identical buffer conditions. The protein was analyzed from extraction of SDS PAGE gel and verified by MS to be human ALA with a molecular weight of 16.1 kDa. The AE-eluted ALA peak contained free oleic acid, palmitic and stearic fatty acid.

Conclusions HAMLET does have cytotoxic activity against non-transformed fetal intestinal cell lines. Evidence of similar ALA complexes in donor milk was observed, though further experiments are required to confirm these findings. The presence of HAMLET in milk may have clinical implications for preterm infants.

HYALURONIC ACID 35KDA PROVIDES PROTECTION AGAINST MURINE NECROTIZING ENTEROCOLITIS THROUGH GENETIC REGULATION OF GOBLET CELL FUNCTION, INNATE IMMUNITY, AND EPITHELIAL-TO-MESENCHYMAL TRANSITION

1KY Burge*, 1MA Trammell, 1J Eckert, 1A Wilson, 3SR Lueschow, 3SJ McElroy, 1DW Dyer, 1H Chaaban. 1The University of Oklahoma Health Sciences Center, Oklahoma City, OK; 3The University of Iowa Hospitals and Clinics Department of Pathology, Iowa City, IA; 1University of California Davis Health System, Sacramento, CA

Purpose of Study Necrotizing enterocolitis (NEC), an inflammatory disease of the intestine, is a common gastrointestinal emergency among preterm infants. Intestinal barrier dysfunction, hyperactivation of the premature immune system, and dysbiosis are thought to play major roles in the disease. Human milk (HM) is known to be protective against NEC, but the mechanism(s) have been unclear. Our lab focuses on the bioactive properties of hyaluronan (HA), a glycosaminoglycan present in HM, in accelerating intestinal development and preventing inflammation-induced tissue damage. Our previous data demonstrated HA of 35kDa molecular weight (HA35) is protective in the Dithizone/Klebsiella (D/K) murine NEC model. The purpose of this study was to determine the effect of HA35 in a second mouse model of NEC incorporating both Paneth cell ablation and formula feeding. We hypothesized HA35 treatment would reduce histological injury and mortality through a combination of factors associated with microbiome compositional shifts and differential expression of genes associated with inflammation.

Methods Used P14 CD-1 mouse pups were subjected to intraperitoneal injection with dithizone, a zinc chelator, to significantly reduce Paneth cell function, and orally gavaged 200ul of rodent milk substitution formula (RMS) every 3hr for 4 feeds. Tissues were collected for RNA analysis, histology, NEC scoring, plasma and tissue cytokines, and stool bacterial sequencing.

Summary of Results HA35 significantly reduced both mortality and severity of illness in this model. Microbiome analysis of 16S ribosomal RNA (rRNA) sequencing and plasma and tissue cytokine analysis did not reveal significant differences between groups. However, bulk RNA-Seq analysis comparing NEC pups to NEC pups treated with HA revealed several important differences in genes associated with goblet cell function, mucosal inflammation, and the promotion of epithelial ‘stemness.’ TRIM58 (trisparite motif-containing 58), a protein expressed by both intestinal epithelial and mononuclear cells, works to balance inflammation with protection provided by innate immune activation of toll-like receptor 2 (TLR2). Ressitin-like molecule beta (RETNLB), a gram-negative bacterial goblet cell protein, specifically targets Proteobacteria commonly implicated in NEC-associated dysbiosis. Finally, ST6GALNAC1 (ST6 N-Acetylgalactosaminide alpha-2,6-Sialyltransferase 1), a gene involved in O-glycan truncation, may promote the epithelial-to-mesenchymal transition required for stem cell-associated repair of the gut.

Conclusions Upregulation of these critical protective and reparative mechanisms of the small intestine likely play a role in the enhanced survival and reduced pathology of HA-treated pups subjected to NEC-like intestinal inflammation, providing genes and proteins of potential interest for translation to the human preterm disease.

HYALURONAN 35KDA PROMOTES EPITHELIAL VIABILITY AND ACCELERATES WOUND HEALING IN AN ENTEROID MODEL OF INTESTINAL REGENERATION

A Wilson*, Ky Burge, J Eckert, H Chaaban. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

Purpose of Study Hyaluronan 35kDa (HA35), a human milk glycosaminoglycan, has been shown to protect against experimental necrotizing enterocolitis (NEC), an intestinal inflammatory condition affecting preterm infants. While healing effects of HA on re-epithelization of the skin and attenuation of inflammation and injury to the lungs have been reported, studies have focused on HA>1,000kDa. The potential role of HA35, a low molecular weight HA, on intestinal epithelial repair, a process critical to barrier function maintenance and prevention of bacterial translocation from the lumen, is unknown. We aimed to explore epithelial-specific effects of HA35 on intestinal regeneration using an in vitro enteroid model containing all major intestinal epithelial cell types. We hypothesized HA35 would promote both cell viability during inflammatory challenge, and accelerate healing of a scratch wound.

Methods Used To assess the influence of HA35 on cell viability, ileal enteroids, derived from preterm non-human primate...
(NHP), were plated in Matrigel domes. Enteroids were pre-treated with HA35 (50–300μg/ml) or control (PBS) for 24 hr, then subjected to 25μg lipopolysaccharide for 4 hrs. A Cell-Titer-Glo 3D kit was used to measure cell viability via luminescence. To explore the potential wound healing properties of HA35, dissociated NHP cells from 3D enteroids were seeded in a 24-well plate coated with Matrigel. Confluent monolayers were pretreated with HA35 (50μg/ml, 100μg/ml, or 200μg/ml) or PBS for 24 hrs. Media was removed and monolayers were scratched using a p200 pipette tip. Cells were washed with PBS and media was replaced with fresh media containing either HA35 or PBS. Automated real-time images were collected every 4 hrs for 1d using the IncuCyte S3. Images were analyzed in ImageJ using the Wound Healing Assay plugin. Experiments were analyzed using ANOVA or Student’s t-test, as appropriate.

Summary of Results HA35 treatment of 3D enteroids suggest concentrations up to 150μg/ml provide significantly enhanced viability during inflammatory challenge. Following wounding, HA35 at 100μg/ml and 200μg/ml provide increased healing at both 4 hrs and 12 hrs compared to control.

Conclusions These results suggest HA35 in vitro promotes wound healing, likely through a combination of cell proliferation at, and migration to, the wound edge. In addition, HA35, up to 150μg/ml, protects intestinal enteroid viability during simulated gram-negative bacteria-associated inflammation. Future studies will focus on the ability of HA35 to prevent bacterial invasion and translocation of intestinal enteroid monolayers.

**Abstract #574 Table 1**

<table>
<thead>
<tr>
<th>Perfusion Variables</th>
<th>Correlation Coefficient (r)</th>
<th>p-value</th>
<th>Observations, n</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI and MBP</td>
<td>0.09</td>
<td>0.37</td>
<td>537</td>
</tr>
<tr>
<td>PI and rcSO2</td>
<td>0.33</td>
<td>0.02*</td>
<td>462</td>
</tr>
<tr>
<td>rcSO2 and Serum Lactate</td>
<td>-0.37</td>
<td>0.00*</td>
<td>153</td>
</tr>
</tbody>
</table>

**Abstract #574 Figure 1**

Mean ± SEM (A) Enteral fluid intake in both groups from birth to postnatal day 14. (B) Percent weight loss in both groups from birth to postnatal day 14. (C) Urine output in both groups from birth to postnatal day 14. (D) Serum sodium level in both groups from birth to postnatal day 14.
and postnatal day 14. All statistical analyses were performed using JMP Pro, version 16.

**Summary of Results**  Data from 60 infants were included in this analysis. The study intervention led to significant differences in enteral fluid intake between groups from postnatal day 5 to postnatal day 9 (figure 1, panel A). In the early feeding group, significant weight loss (>10%) occurred after postnatal day 7, when parenteral fluids were discontinued and exclusive enteral nutrition with unfortified human milk was established (figure 1, panel B). Urine output was lower in the early feeding group, but this difference was not statistically significant after adjustment for subject-to-subject variability (p=0.12). Urine output was significantly lower between postnatal day 7 and 10 (figure 1, panel C). Overall, no significant differences in average sodium concentrations between groups were found (p=0.39). Sodium concentrations were lower on postnatal day 4 and postnatal day 14 in the early feeding group (figure 1, panel D).

**Conclusions**  Early advancement of feedings is associated with reduced weight loss from birth weight during the first week after birth.

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**PERFUSION IN PRETERM INFANTS (PIP) STUDY: A CONTINUOUS NON-INVASIVE MONITORING OF PERFUSION IN VERY LOW BIRTH WEIGHT PRETERM INFANTS**

J Desai*, JM Smith, JM Patel, D Shakti, C Tuura, H Williams, N Dankhara, AJ Bhatt. The University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.576

**Purpose of Study**  There is no standard tool available to measure perfusion objectively, continuously and conveniently at the bedside in very low birth weight (VLBW) infants. The role of Perfusion Index (PI) as a tool to measure peripheral tissue perfusion and Near-Infrared Spectroscopy (NIRS, rcSO2) to monitor brain perfusion in VLBW infants is still being studied. We aimed to study the correlation between PI, rcSO2, mean blood pressure (MBP) and serum lactate during the first 96 hours of life in VLBW infants.

**Methods Used** This was a prospective observational study. Infants born at ≤32 weeks of gestation or birth weight of 1500 gram born at our center except for critical congenital heart disease were enrolled within 24 hours of birth. PI and NIRS values were stored continuously in intervals of 30 seconds. MBPs were recorded every 3 hours, and serum lactates were collected at 6, 12, 24, 48, 72, and 96 hours of life. An average of 30 minutes of PI and NIRS recording around the time of MBP and lactate measurement were extracted and a Pearson correlation coefficient was obtained for each relationship. It was further confirmed by the bootstrapping method by age in hours. A linear regression model was conducted to control for age in hours, Gestational age (GA), ventilator status, COVER score, and PDA status.

**Summary of Results**  A total of 34 infants and 537 observations were included in the analysis. Mean(SD) gestation and birth weight were 28±2.6 and 1066±330 grams respectively. PI was positively correlated with rcSO2 (r=0.33, p=0.02) and negatively with serum lactate (r=-0.40, p=0.00). rcSO2 was negatively correlated with serum lactate (r=-0.37, p=0.00).

**Abstract #574 Table 1**

<table>
<thead>
<tr>
<th>Perfusion Variables</th>
<th>Correlation coefficient (r)</th>
<th>p-value</th>
<th>Observations, n</th>
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</thead>
<tbody>
<tr>
<td>PI and rcSO2</td>
<td>0.33</td>
<td>0.02*</td>
<td>462</td>
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<tr>
<td>PI and Serum Lactate</td>
<td>-0.40</td>
<td>0.00*</td>
<td>153</td>
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<tr>
<td>PI and MBP</td>
<td>0.09</td>
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<td>537</td>
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<td>rcSO2 and Serum Lactate</td>
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<td>0.00*</td>
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<tr>
<td>rcSO2 and MBP</td>
<td>0.29</td>
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<td>MBP and Serum Lactate</td>
<td>-0.16</td>
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<td>153</td>
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</table>

*p

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**Abstract #574 Figure 1**
POLYETHYLENE BAGS WITH OR WITHOUT POLYETHYLENE HEAD COVERING TO PREVENT NEONATAL HYPOTHERMIA IN PRETERM OR LOW BIRTH WEIGHT INFANTS: A RANDOMIZED CLINICAL TRIAL

1C Travers*, 1WA Carlo, 2T Belsches, 3A Tilly, 4T Miller, 5M Mwenechanya, 6E Chomba, 5&6 Manayan, 7N Ambalavanar, 1&M Ramani, 1The University of Alabama at Birmingham School of Medicine, Birmingham, AL; 2Prisma Health Baptist Hospital, Columbia, SC; 3University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, NC; 4Kids R Us, Arab, AL; 5University Teaching Hospital, Lusaka, Zambia; 6Centre for Infectious Disease Research Zambia, Lusaka, Zambia

Purpose of Study Polyethylene bags prevent neonatal hypothermia among preterm infants soon after birth. Polyethylene head coverings may further reduce heat loss. The purpose of this study was to test the hypothesis that among preterm infants 29w 0d to 36w 6d or 1400 to 2500 grams, born in a hospital that practices the WHO warm-chain thermoregulation protocol, a polyethylene bag with polyethylene head covering (PB-HC) compared with a polyethylene bag (PB) alone decreases the incidence of hypothermia at 1 hour after birth.

Methods Used This was a single center randomized controlled trial with a 1:1 parallel allocation to either PB-HC or PB alone among preterm or low birth weight infants born in a tertiary referral center in Lusaka, Zambia. Infants in both groups received a standard newborn cotton hat to place over the polyethylene head covering in the PB-HC group and to place over the head in the PB alone group. The primary outcome was the rate of any hypothermia (axillary temperature < 36.5°C) at 1 hour after birth. A sample of 182 infants was required to detect a 20% absolute reduction from 41% to 21% in the rate of hypothermia with 80% power and a two-tailed type I error rate of 0.05. We used chi-square or Fisher’s exact test for categorical data and independent samples t-test for continuous data. All analyses were by intention to treat.

Summary of Results We terminated the study early as personnel were not available to continue recruitment when 93 infants with a mean gestational age of 34w 5d ± 3w 0d and a birth weight of 2517 ± 566 grams had been enrolled. One infant in each group was lost to follow-up. There was no difference in baseline axillary temperatures (PB-HC 36.0±0.8°C versus PB 35.9±0.8°C), room temperatures, or humidity between groups. There was a decreased risk of any hypothermia at one hour after birth among infants in the PB-HC group compared with the PB alone group (15/44 (34.1%) versus 31/47 (66.0%)); relative risk (RR), 0.52; 95% confidence intervals (CI), 0.33–0.82; p=0.01). There was also a decreased risk of moderate-severe hypothermia among infants in the PB-HC group compared with the PB alone group (6/44 (13.6%) versus 18/47 (38.3%); relative risk (RR) 0.36, 95% confidence intervals (CI) 0.16–0.81; p=0.02). The temperature at 1 hour after birth was higher in the PB-HC group compared with the PB group (PB-HC 36.6±0.7°C versus PB 36.1±0.6°C; p<0.001). The rate of hyperthermia or other adverse events did not differ between groups.

Conclusions Among preterm or low birth weight infants in a resource-limited setting that practices the WHO warm-chain for thermoregulation, including the use of cotton hats, polyethylene bags with polyethylene head covering decreased early hypothermia compared with polyethylene bags alone.

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HOSPITAL OUTCOMES IN NANO-PREEMIE INFANTS RECEIVING INVASIVE VS. NON-INVASIVE VENTILATION AT BIRTH


10.1136/jim-2022-SRMC.578

Purpose of Study Infants with gestational age between 22 0/7 to 23 6/7 weeks (referred to here as nano-preemie infants) are at a higher risk of adverse outcomes. Non-invasive respiratory support at birth improves outcomes in 24 0/7 to 29 6/7 weeks gestational age preterm infants. There is limited evidence on whether similar benefits of non-invasive respiratory support at birth are seen in nano-preemie infants.

Hypothesis: Intubation <10-minutes after birth is associated with a higher incidence of bronchopulmonary dysplasia or death by 36 weeks post-menstrual age in nano-preemie infants.

Methods Used Design: Cohort study

Setting: Level-III neonatal intensive care unit

Participants: All nano-preemie infants delivered from January 2014 to December 2018 were included. Infants receiving palliative/comfort care at birth were excluded.

Main Outcomes: The primary outcome was the composite outcome of bronchopulmonary dysplasia (physiological definition) or death by 36 weeks post-menstrual age. Infants were grouped by intubation timing after birth (>10-minutes and ≤10-minutes after birth, as non-invasive and invasive respiratory support at birth groups, respectively).

Summary of Results 145 consecutively born nano-preemie infants were included. The incidence of bronchopulmonary

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Abstract #576 Table 1 Adjusted outcome analyses by group

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Unadjusted</th>
<th>Invasive Respiratory Support at Birth (N=80)</th>
<th>Non-invasive Respiratory Support at Birth (N=45)</th>
<th>Adjusted Odds Ratio* (95% CI)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPD or death by 36 weeks post-menstrual age</td>
<td>53 (88.3%)</td>
<td>71 (85.5%)</td>
<td>0.34 (0.07-1.56)</td>
<td>0.166</td>
<td></td>
</tr>
<tr>
<td>Symptomatic PDA or death by 36 weeks post-menstrual age</td>
<td>32 (53.3%)</td>
<td>61 (71.8%)</td>
<td>0.51 (0.15-1.70)</td>
<td>0.273</td>
<td></td>
</tr>
<tr>
<td>NEC (Bell’s stage II/III) or death by 36 weeks post-menstrual age</td>
<td>25 (41.7%)</td>
<td>50 (58.8%)</td>
<td>0.47 (0.15-1.48)</td>
<td>0.199</td>
<td></td>
</tr>
<tr>
<td>Severe IVH (Grade 3 or 4) or death by 36 weeks post-menstrual age</td>
<td>26 (43.3%)</td>
<td>54 (63.5%)</td>
<td>0.45 (0.14-1.44)</td>
<td>0.180</td>
<td></td>
</tr>
<tr>
<td>ROP (stage 2) or death by 36 weeks post-menstrual age</td>
<td>47 (78.3%)</td>
<td>67 (78.6%)</td>
<td>0.53 (0.14-2.01)</td>
<td>0.356</td>
<td></td>
</tr>
</tbody>
</table>

*Adjusted for antenatal corticosteroids, birth weight, gestational age by logistic regression analyses. The adjusted odds ratios represented in the table are for intubation >10-minute group. BPD=bronchopulmonary dysplasia, post-menstrual age = post-menstrual age, PDA = patent ductus arteriosus, NEC = necrotizing enterocolitis, IVH = intraventricular hemorrhage, ROP = retinopathy of prematurity.
dysplasia or death by 36 weeks post-menstrual age was 53/60 (88.3%) vs. 71/85 (83.5%), p=0.166 in non-invasive and invasive respiratory support at birth groups, respectively. On logistic regression analyses adjusted for antenatal corticosteroids, birthweight, and gestational age, there was no significant difference for bronchopulmonary dysplasia or death by 36 weeks post-menstrual age (OR=0.34, 95% CI=0.07–1.55) between the groups. All secondary outcomes were also not significantly different between the groups. However, there was a trend for better outcomes in the non-invasive respiratory support at birth group for all outcomes.

Conclusions Non-invasive respiratory support in the first 10-minutes after birth is feasible and may decrease adverse hospital outcomes compared to intubation and early surfactant in nano-preemie infants. The current study provides a basis for an adequately powered interventional randomized trial for setting the standard of care for nano-preemie infants.

### Abstract #577 PREDICTING ADIPOSITY IN INFANTS BORN PRETERM

1) Razzaghy*, 1AA Salas, 1Y Zhang, 1Y Yi. 1The University of Alabama at Birmingham School of Medicine, Birmingham, AL; 2The University of Alabama at Birmingham School of Public Health, Birmingham, AL

10.1136/jim-2022-SRMC.579

**Purpose of Study** To establish a predictive equation for estimating adiposity in preterm infants

**Methods Used** This is a secondary analysis of data collected prospectively from a training cohort of infants born preterm between 2016 and 2017 and a validation cohort of infants born preterm between 2018 and 2019. In both training and validation cohorts, standard anthropometric measures for each infant and body composition parameters were gathered by ADP at 36 weeks PMA or hospital discharge. In the training cohort, clinical variables significantly associated with body fat mass in Kg were identified using a stepwise regression model (p value threshold: 0.25). These variables were integrated into a predictive equation for body fat mass. The generated equation was then applied to the validation cohort. In the validation cohort, the correlation coefficient and mean difference between predicted and measured values for body fat mass were calculated.

**Summary of Results** Infants included in the training cohort were born less than 32 weeks GA (n=84), mean GA 30.2 ± 1.0 weeks, mean birth weight 1471 ± 257 g). The predictive model included the variables gestational age, birthweight z-score, weight gain from birthdate to postnatal day of assessment, BMI, and postnatal age at assessment. The regression coefficient (R²) was 0.66 (RMSE=0.06). When the predictive model developed using the training cohort was applied to a validation cohort (n=35), mean GA 30.1 ± 1.4 weeks, mean birth weight 1311 ± 268 g), the diagnostic accuracy of the model was high. The mean difference between predicted and measured values for body fat mass was -10 g ± 64 g. There was a strong linear correlation between predicted and measured fat mass values (r=0.85). The proportion of infants with fat mass values within an acceptable range of ± 100 g was 86%. The rate of hyperthermia or other adverse events required to detect a 20% absolute reduction from 41% to 20% was 86%.

**Abstract #578 Table 1** RSS in W/L percentiles category

<table>
<thead>
<tr>
<th>Weight/Length Category</th>
<th>Mean RSS</th>
<th>SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50 percentile (N=11)</td>
<td>0.09</td>
<td>0.27</td>
<td>0.01</td>
</tr>
<tr>
<td>50 percentile (N=11)</td>
<td>0.47</td>
<td>0.37</td>
<td></td>
</tr>
</tbody>
</table>

**Abstract #578 Table 2** Maternal and neonatal demographics

<table>
<thead>
<tr>
<th>Maternal Demographics</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>80%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>16.20%</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>46.05%</td>
</tr>
<tr>
<td>Antenatal steroids</td>
<td>74%</td>
</tr>
<tr>
<td>PROM</td>
<td>31.65%</td>
</tr>
<tr>
<td>BMI</td>
<td>35.22 ± 10.19</td>
</tr>
<tr>
<td>Neonatal Demographics</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Females</td>
<td>59%</td>
</tr>
<tr>
<td>Mean birth weight (grams)</td>
<td>0.906±0.24</td>
</tr>
<tr>
<td>Mean gestational age (weeks)</td>
<td>26.8±1.77</td>
</tr>
<tr>
<td>Duration of Ventilation (days)</td>
<td>19.41±28.37</td>
</tr>
<tr>
<td>Mean Wt/L z-scores @ 36 weeks CGA</td>
<td>(-0.32±1.03)</td>
</tr>
<tr>
<td>Mean BMI @ 36 weeks CGA</td>
<td>12.29±1.36</td>
</tr>
<tr>
<td>Mean RSS @ 36 weeks CGA</td>
<td>0.27±0.45</td>
</tr>
<tr>
<td>Mean calories (Kcal/kg/d)</td>
<td>115.2±16.8</td>
</tr>
<tr>
<td>Mean protein (g/kg/d)</td>
<td>3.75±0.59</td>
</tr>
<tr>
<td>Postnatal Steroids</td>
<td>26.00%</td>
</tr>
</tbody>
</table>

### Abstract #578 HIGHER WEIGHT FOR LENGTH IS ASSOCIATED WITH INCREASED SEVERITY IN BRONCHOPULMONARY DYSPLASIA IN PRETERM INFANTS

P Alur, R Kakkoot*, K Harvey, K Hart, Z White, W Yimer. University of Mississippi Medical Center, Brandon, MS

10.1136/jim-2022-SRMC.580

**Purpose of Study** Bronchopulmonary dysplasia (BPD) causes significant morbidity in infants. Obesity negatively impacts lung function in children and adolescents. There are no studies correlating weight for length (W/L) or the body mass index (BMI) in preterm infants with higher Respiratory Severity Scores (RSS) in BPD. W/L is accurate in predicting fat-free mass in premature infants. To study prospectively if higher W/L @ 36 weeks of gestation correlates with higher RSS at 36 weeks corrected gestational age in preterm infants with BPD.

**Methods Used** Supported by NIH (Award # 1U54GM115428). Preterm infants born at <30 weeks requiring respiratory support @ 30–33 weeks for >2 days were enrolled. Weight, length, and head circumference were measured weekly. Data on W/L z-scores, percentiles & BMI were collected. RSS was calculated as per the STOP-ROP trial. Data were analyzed using descriptive and inferential statistics. Linear
Abstract #578 Figure 1

mixed model regression was used to study the relationship between the continuous variables with potential covariates.

Summary of Results We enrolled 81 preterm infants. Maternal and neonatal demographics are in the figure. RSS was significantly higher in grade 3 BPD- 1.0 vs 0.23 in grade 1 BPD (p <0.0001) (figure). For every unit increase in W/L Z score, RSS increased by 0.069 (p <0.0001). RSS was significantly correlated with W/L Z scores, percentiles, and BMI (P < 0.001) even after including postnatal steroids, gestational age, & sex in the regression model. Without postnatal steroids RSS correlated with W/L Z-scores 0.057 with a p = <0.0001. The mean RSS @ 40 weeks in W/L <= 50 was 0.09 ± 0.27 compared to 0.47 ± 0.37 in >50 percentile category (p=0.01) (table 1).

Conclusions Our study is the first to show that higher BMI and W/L may adversely affect respiratory severity in BPD infants. Hence, an optimal W/L ratio should be maintained to avoid additional burdens in infants with BPD.

Abstract #579 DEVELOPING A STANDARDIZED PREMEDICATION PROTOCOL TO IMPROVE SAFETY OF NON-EMERGENT INTUBATIONS IN THE NEONATAL INTENSIVE CARE UNIT

E Diego*, J Ross, C Wagner. Medical University of South Carolina, Charleston, SC

10.1136/jim-2022-SRMC.581

Purpose of Study We aimed to improve patient safety during non-emergent endotracheal intubation by implementing a standardized premedication protocol to decrease number of attempts and adverse events.

Methods Used A multi-disciplinary workgroup developed protocol content. An educational video series was created to train bedside staff in medication administration and introduce the bedside recorder role for auditing adverse events. A pre-intubation checklist targeted interdisciplinary communication and clear role assignments. Differences between baseline and protocol cohort measures were compared using independent t test for continuous, non-normally distributed data and chi-squared for discrete non-normally distributed data for select variables.

Summary of Results 47% (97/206) of bedside staff viewed video content ahead of protocol launch. 216 patients completed the protocol with 81% (174/216) audit form completion. Compared to the baseline cohort, a statistically significant decrease in average number of intubation attempts (2.2 ± 0.3 vs. 1.8 ± 0.3) (p=0.007) was observed. There was an increase in success rate on 1st attempt intubation attempt across all provider types from a baseline of 39% (62/158) to 57% (124/216) with a notable improvement in rate of trainee success on 1st attempt from 1/40 (<1%) to 43% (31/72). The rate of non-severe adverse events (as% of overall adverse events) increased from a baseline of 48% to 56%. The rate of severe and rare events decreased from a baseline of 35% to 26%. Rate of tachycardia with atropine use was 5% (10/216), however no baseline data is available to determine process.
Abstract

#580

**EFFECT OF MOTHER’S MILK COMPARED TO DONOR MILK ON GROWTH AND BODY COMPOSITION IN PRETERM INFANTS**

A Horner*, M Elabiad, AJ Talati. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2022-SRMC.582

**Purpose of Study**

Proper nutrition is essential to the growth and development of infants. This becomes especially critical when babies are born preterm and must continue development in the setting of the NICU. Mother’s own milk (MOM) is the ideal choice for feeding these neonates; however, it is not always available. Thus, donor breast milk (DBM) is used in VLBW babies until they reach 1500 g, followed by cow’s milk formula. We wanted to review the impact of MOM vs DBM on growth of VLBW babies.

**Methods**

Used a retrospective chart review of 39 VLBW patients was performed. Data regarding feeding, growth and demographics were compared. Air displacement plethysmography measurements to measure body fat were recorded close to 36wk PMA. Cases were divided into groups, mixed, mother’s own milk (>80% feeding (MOM) and donor breast milk (>80% feeding (DBM), for comparison.

**Summary of Results**

Of the 39 patients included in this study, 11 received ≥80% MOM, 21 received DBM, and 7 received a combination of the two until reaching a weight of 1500 g. 6 other patients were reviewed but excluded as they did not meet criteria. The groups had similar birth weights, gender distributions and clinical courses, as seen in table 1. The MOM group had a later gestational age at birth and higher incidence of intraventricular growth restriction. Patients receiving primarily MOM had higher carbohydrate intakes (g/kg/d) (MOM 9.4, DBM 9, p=0.02) while patients receiving DBM had higher fat intakes (g/kg/d) (MOM 6.1, DBM 7, p<0.01) leading to higher caloric intakes (cal/kg/d) (MOM 124, DBM 127, p=0.09). Body fat percentage (p=0.89) as well as z score changes for weight (p=0.5) and length (p=0.91) from birth until discharge were similar between the two groups. However, weight velocities (g/kg/d) seemed higher in MOM (MOM 14.9, DBM 14.1, p=0.24) and changes in head circumference z score from birth to 1500 g were significantly higher in MOM (MOM -0.19, DBM -0.78, p=0.02).

**Conclusions**

When DBM is the primary source of nutrition, higher caloric and fat intake are required to achieve the same growth as babies receiving MOM. Our data also suggest that Infants fed MOM may potentially have better weight velocity and change in head circumference z-score when compared to infants receiving primarily DBM.

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**Population health & precision medicine**

Concurrent session

1:00 PM

Saturday February 12, 2022

#581

**A COMPARISON OF TRENDS IN CHRONIC KIDNEY DISEASE IN MISSISSIPPI USING THE CHRONIC KIDNEY DISEASE EPIDEMIOLOGY COLLABORATION 2009 VS. 2021 EQUATIONS**

M Tio, X Yu, ME Hall, T Shafi. University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2022-SRMC.583

**Purpose of Study**

The new Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) glomerular filtration rate estimation (eGFR) equations without the race variable were developed to improve equity in medicine. We characterized the trends in CKD reclassification using the new CKD-EPI 2021 eGFR equation for the outpatients at the University of Mississippi Medical Center (UMMC), the sole quaternary academic center serving the state with one of the highest proportions of Black individuals and highest burden of CKD.

**Methods**

Used data obtained from UMMC’s Research Data Warehouse. We included patients ≥18 years with ≥1 outpatient encounter and ≥1 serum creatinine measured from November 1, 2019 to May 8, 2021. We calculated the eGFRs using CKD-EPI 2009 and CKD-EPI 2021 equations and compared the changes in the distribution of CKD stages, overall and by race.

**Summary of Results**

We included 45,308 patients in our study. Mean age was 56 years, 58% were women, 54% Black adults, 32% had diabetes, and 10% had heart failure. Overall prevalence of CKD in our cohort, defined by an eGFR <60 mL/min/1.73 m², was 15.1% when using the CKD-EPI 2009

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**Abstract #580 Table 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mixed n=7</th>
<th>MOM n=11</th>
<th>DBM n=21</th>
<th>Contrast MOM vs DBM p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Weight (g)</td>
<td>903 ± 160</td>
<td>1160 (850, 1195)</td>
<td>975 ± 180</td>
<td>0.44</td>
</tr>
<tr>
<td>Birth Gestational Age</td>
<td>27 ± 1.6</td>
<td>28.9 ± 1.8</td>
<td>27.7 ± 1.5</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Male to Female ratio</td>
<td>2 to 5</td>
<td>2 to 9</td>
<td>10 to 11</td>
<td>0.14</td>
</tr>
<tr>
<td>DOL reached 1500 g</td>
<td>40 ± 7</td>
<td>33 ± 16</td>
<td>37 ± 13</td>
<td>0.41</td>
</tr>
<tr>
<td>DOL reached full feeds</td>
<td>16 (15, 19)</td>
<td>13 (10, 18)</td>
<td>15 ± 5</td>
<td>0.9</td>
</tr>
<tr>
<td>IUGR</td>
<td>2 ± 4</td>
<td>2 ± 1</td>
<td>1 ± 0.4</td>
<td>0.04</td>
</tr>
<tr>
<td>HC Zscore at birth</td>
<td>-0.48 ± 1.75</td>
<td>-1.18 ± 0.58</td>
<td>-0.29 ± 0.61</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>IVH Grade 3, 4</td>
<td>0 ± 0</td>
<td>0 ± 0</td>
<td>0 ± 0</td>
<td>-</td>
</tr>
<tr>
<td>PMA weaned to RA</td>
<td>32.8 ± 2.2</td>
<td>31.6 (30.9, 35.3)</td>
<td>33.8 ± 2.7</td>
<td>0.25</td>
</tr>
<tr>
<td>PMA at Discharge</td>
<td>36.9 ± 1.9</td>
<td>35.4 (35.2, 39)</td>
<td>37.5 (36.6, 38.2)</td>
<td>0.85</td>
</tr>
<tr>
<td>Percent MOM</td>
<td>20 ± 12</td>
<td>75 ± 24</td>
<td>0 (0, 2)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Percent DBM</td>
<td>31 ± 11</td>
<td>0 (0, 0)</td>
<td>44 ± 15</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Percent Formula</td>
<td>46 ± 17</td>
<td>27 (0, 46)</td>
<td>52 ± 15</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>
Abstract #581 Table 1 Reclassification tables showing the prevalence per CKD stage using the CKD-EPI 2009 vs. CKD-EPI 2021 equations in Black patients and Non-Black patients

<table>
<thead>
<tr>
<th>CKD-EPI 2009 eGFR</th>
<th>CKD-EPI 2021 eGFR</th>
<th>&lt;15</th>
<th>15-29</th>
<th>30-44</th>
<th>45-59</th>
<th>260</th>
<th>45-59</th>
<th>15-29</th>
<th>&lt;15</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥60</td>
<td>≥60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>260</td>
<td>45-59</td>
<td>15-29</td>
<td>&lt;15</td>
<td>21,423</td>
</tr>
<tr>
<td>260</td>
<td>20.402</td>
<td>95.7%</td>
<td>931</td>
<td>4.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-59</td>
<td>1,546</td>
<td>3.8%</td>
<td>291</td>
<td>15.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,837</td>
</tr>
<tr>
<td>30-44</td>
<td>790</td>
<td>41.4%</td>
<td>74</td>
<td>8.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>864</td>
</tr>
<tr>
<td>15-29</td>
<td>300</td>
<td>95.8%</td>
<td>13</td>
<td>4.2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>313</td>
</tr>
<tr>
<td>&lt;15</td>
<td>42</td>
<td>100.0%</td>
<td>42</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>84</td>
</tr>
</tbody>
</table>

Black Patients

<table>
<thead>
<tr>
<th>CKD-EPI 2009 eGFR</th>
<th>CKD-EPI 2021 eGFR</th>
<th>&lt;15</th>
<th>15-29</th>
<th>30-44</th>
<th>45-59</th>
<th>260</th>
<th>45-59</th>
<th>15-29</th>
<th>&lt;15</th>
<th>Row Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥60</td>
<td>≥60</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>260</td>
<td>17,039</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-59</td>
<td>859</td>
<td>35.3%</td>
<td>1,571</td>
<td>64.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,430</td>
</tr>
<tr>
<td>30-44</td>
<td>359</td>
<td>33.6%</td>
<td>711</td>
<td>66.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,070</td>
</tr>
<tr>
<td>15-29</td>
<td>76</td>
<td>29.0%</td>
<td>186</td>
<td>71.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>262</td>
</tr>
<tr>
<td>&lt;15</td>
<td>6</td>
<td>21.4%</td>
<td>22</td>
<td>78.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28</td>
</tr>
</tbody>
</table>

Non-Black Patients

eGFR, and 15.3% with CKD-EPI 2021 eGFR. Among Black patients, 931 persons who did not have CKD using CKD-EPI 2009 were reclassified to having CKD using CKD-EPI 2021; an overall 3.8% increase in CKD prevalence in Black patients. Conversely, among non-Black patients, 859 persons who had CKD using the CKD-EPI 2009 equation were reclassified to having no CKD with the CKD-EPI 2021 equation, decreasing the overall CKD prevalence in non-Black patients by 4.1%. The CKD-EPI 2021 equation also reclassified more Black patients to a more advanced CKD stage, but increased reclassification of non-Black patients to a milder CKD stage (table 1). With the implementation of CKD-EPI 2021 equation, 54 more Black patients with CKD will be eligible for earlier transplant referral (eGFR &lt;25 ml/min/1.73 m²), whereas the number of eligible non-Black patients will decrease by 37.

Conclusions The CKD-EPI 2021 eGFR increased prevalence of all CKD stages among Black patients and reduced it among non-Black patients. The effects of this change on clinical care, quality, and outcomes need further investigation.

HEALTH FATALISM IN DIABETES WITHIN POPULATIONS OF MOBILE, ALABAMA

1,2C. Crook*, 3E. Crook, 4L. Parker, 6M. Arietta. 1Faulkner University School of Medicine, New Orleans, LA; 2Faulkner University School of Public Health and Tropical Medicine, New Orleans, LA; 3University of South Alabama College of Medicine, Mobile, AL; 4University of South Alabama, Mobile, AL

Purpose of Study To evaluate pessimism associated with a diagnosis of diabetes amongst different zip codes of Mobile, Alabama.

Methods Used Zip codes within Mobile, Alabama, were divided into the Focus, Intermediate, and Non-Disadvantaged subgroups based on demographic characteristics. The Focus subgroup (36603, -10, -17) was greater than 90% African American (AA) with more than 30% of its population below the federal poverty line (FPL). The Intermediate subgroup (36602, -03, -04, -05, -06, and -07) was greater than 40% AA with 20% to 30% of the population below the FPL. The Non-Disadvantaged subgroup (36608, -09, -11, -13, -18, -19, -93, and, -95) was less than 40% AA with less than 20% of the population below the FPL. Individuals within these zip codes were evaluated via questionnaire containing 15 questions related to both diabetes management and knowledge of the disease. The questionnaire was tailored to reflect cultural values, terminology, and literacy levels in the study populations. Eligibility criteria included: age greater than 19 years, residence within study zip codes, and proficiency in the English language.

Summary of Results 306 participants who met all eligibility criteria responded to the survey. Of those who responded to the survey, the prevalence of diabetes within the Focus, Intermediate, and Non-Disadvantaged groups was 15.65%, 16.13%, and 16.42%, respectively. Among those without diabetes (n=217), 859 persons who had CKD using the CKD-EPI 2009 equation were reclassified to having no CKD with the CKD-EPI 2021 equation, decreasing the overall CKD prevalence in non-Black patients by 4.1%. The CKD-EPI 2021 equation also reclassified more Black patients to a more advanced CKD stage, but increased reclassification of non-Black patients to a milder CKD stage (table 1). With the implementation of CKD-EPI 2021 equation, 54 more Black patients with CKD will be eligible for earlier transplant referral (eGFR &lt;25 ml/min/1.73 m²), whereas the number of eligible non-Black patients will decrease by 37.

Conclusions The CKD-EPI 2021 eGFR increased prevalence of all CKD stages among Black patients and reduced it among non-Black patients. The effects of this change on clinical care, quality, and outcomes need further investigation.

SAFER AT HOME: PROVIDING FIREARM LOCKS AND MEDICATION LOCK BOXES IN THE PEDIATRIC EMERGENCY DEPARTMENT

1A. Webb*, 2E. Jorge, 3C. Burch, 4M. Nichols, 5K. Monroe. 1UAB Hospital, Birmingham, AL; 2The University of Alabama at Birmingham School of Medicine, Birmingham, AL

Purpose of Study Injuries are the leading cause of pediatric death in the U.S., and medication misuse and firearm injuries contribute a significant portion to both unintentional and intentional injury deaths. This study was designed to assess knowledge of safe storage locations of both medications and firearms and to assess whether caregivers remembered previously having received counseling on safe storage from a healthcare provider.
Methods Used This survey was conducted in the ED of a large stand-alone children’s hospital. Families of patients who were triaged as Emergency Severity Index (ESI) level 3, 4, or 5 were approached for inclusion. The study was described to families by the medical student investigator and participants were enrolled if they gave verbal consent. Families whose primary language was not English and families of higher acuity patients (ESI 1 and 2) were excluded to ensure informed consent. The student read the questions to participants and recorded their answers in SurveyMonkey, an online database. Safe storage of medications was defined to be medications stored in a locked or latched place. Safe storage of firearms was defined to be stored locked and unloaded. At the end of the survey, participants were provided with a medication lock box, a firearm cable lock, and education on their use to ensure safe storage of medications and firearms.

Summary of Results One hundred six potential participants were approached for inclusion in the study; 99 were enrolled (93% enrollment rate). These participants had 199 children at home. Children of participants ranged in age from less than 1 year old to 18 years. Ninety-seven percent of participants lived with the child who presented to the ED more than 50% of the time. Of the 99 participants, only 12% of participants reported they stored medications safely. Forty-six participants reported firearm ownership, and 63% of them reported they stored firearms safely. Firearms were reported to be stored separately from the ammunition 78% of the time. When asked if a healthcare professional had ever spoken with the participant about safe storage, 72% of participants said they had never been counseled on safe medication storage and 83% of participants said they had never been counseled on safe firearm storage. At the end of the survey, 73 participants took a medication lock box and 95 participants took a firearm cable lock.

Conclusions Many families do not store medications safely, and though the majority of firearm owners reported they stored their firearms safely, there were still 35% of firearm owners who did not. This leaves the home environment a potentially dangerous place for children. Concerningly, participants overwhelmingly did not remember a healthcare provider having discussed storage of medications or firearms in the past. This highlights the need for improved anticipatory guidance on injury prevention topics. By receiving safety equipment and education in the ED, families were given the tools they need to keep their children safer at home.

Purpose of Study As COVID-19 spread throughout the US, risk lowering activities were followed to varying degrees by the population. We hypothesize that after a child’s hospitalization, a parent’s risk tolerance score for COVID-19 activities will decrease, and they will take more stringent measures moving forward when they process their experiences of hospitalization.

Methods Used From January – June 2021, a convenience sample of parents of patients admitted to an academic center and an affiliated community hospital were surveyed on their child’s day of discharge. Baseline characteristics of the parent and of the hospitalization (Length of Stay, ICU admission, need for respiratory support) were obtained. The primary outcome was a change in self-identified risk tolerance score (RTS – which was a Likert score from 1 – Strict 2 - Fairly Strict 3 - Moderate 4 - Fairly Open 5 - Very Open). Parents were surveyed on their activities of socialization and precautions prior to the child’s hospitalization, and then asked to report planned changes to these activities moving forward after discharge. Parents were also interviewed on reasons for changes. Paired t-test was used to determine differences in RTS. Logistic regression was used to determine if any baseline or hospitalization factors were associated with changes in RTS. Themes were identified in qualitative data and organized into categories.

Summary of Results 95 parents were interviewed (73 from academic, 22 from community). Median age was 34 years [26, 40]. Overall RTS decreased after hospitalization from 2.5 (1.1) to 2.1 (1.1), p <0.0001. Parents whose prehospitalization RTS was 3 (moderate risk tolerance) had significant decreases posthospitalization (2.47, p<0.0001) while the other four levels had non-significant changes. No parents reported an increase in RTS posthospitalization. In regression, none of the baseline or hospitalization factors were associated with changes in RTS. Qualitative analysis showed themes of increased perceived susceptibility to COVID (I realized COVID is more contagious than previously thought (saw hospital doors marked, was afraid)), increased perceived severity of COVID (‘This hospitalization was as scary as death. It made me realize just how serious COVID really is.’), and wanting to protect their kids as reasons (‘I want to be more protective of kids, feel more aware/conscious of where we go and if it’s necessary to go’) for increased concern of COVID after hospitalization.

Conclusions The experience of their child’s hospitalization decreased parents’ risk tolerance, particularly for parents with moderate views. None of the parents had an increased RTS level after hospitalization. Themes of wanting to protect their kids, increased perceived susceptibility, and increased perceived severity of COVID may be drivers of this change in behavior. This study suggests that for parents whose baseline risk tolerance is not at the two extremes, their child’s hospitalization may prompt behavior changes to decrease COVID risk tolerance.

Purpose of Study Continuity of care improves care outcomes and previous receipt of influenza vaccine has been associated with the receipt of HPV vaccine in privately insured patients. Our hypotheses are that continuity of care and a previous influenza vaccine is associated with increased receipt of HPV vaccine.

Methods Used 2019 National Immunization SurveyTeen was analyzed. This is a nationally representative survey of non-
institutionalized teens 13–17 years living in the US and their identified immunization providers. Only surveys with adequate provider data were used. Teens were up to date (UTD) for HPV vaccine if they are received either 2 or 3 doses depending on the age at first dose. Continuity of care for vaccines was present if only one provider was identified and responded to the survey. Receipt of influenza vaccine was defined as the receipt of vaccine in any of the last 3 seasons. All analyses accounted for the complex sampling design.

Summary of Results In 2019, UTD for HPV vaccine was 54.2% (95% CI 52.7–55.8). Receipt of influenza vaccine was 54.8% (53.2–56.3). Continuity of care was 58.7% (57.2–60.2). Receipt of influenza vaccine was associated with UTD for HPV vaccine of 67.4% (65–69.2) versus 38.3% (36.0–40.6) without receipt. Continuity was associated with UTD for HPV vaccine of 57.6 (55.6–59.6) versus 49.7% (47.4–52.0) without continuity. Logistic regression confirmed the independent association of UTD for HPV vaccine with receipt of influenza vaccine OR 3.3 (2.9–3.8) and continuity of care, OR 1.4 (1.2–1.6).

Conclusions Continuing to improve HPV vaccination is a priority. Improving other aspects of care delivery such as influenza vaccination and continuity of care are likely to also result in improvement of HPV vaccination.

#587 PREGNANCY OUTCOMES IN PATIENTS WITH COVID-19: A SINGLE-CENTER RETROSPECTIVE CHART REVIEW

1D Landis*, 1A Reddy, 1M Rizvi, 1P Lamay, 1N Ray, 1N Manal, 2D Payne, 1Texas Tech University Health Sciences Center School of Medicine, Lubbock, TX; 2Texas Tech University Health Sciences Center, Lubbock, TX

10.1136/jim-2022-SRMC.587

Purpose of Study It is understood that pregnant women are at higher risk for severe COVID-19 illness compared to non-pregnant people. Because of this, careful monitoring should be carried out. The purpose of this study was to identify the clinical characteristics, neonatal outcomes, and population demographics of COVID-positive pregnant women admitted to UMC Health Center in Lubbock, Texas.

Methods Used We reviewed the charts of 35 pregnant patients with confirmed COVID-19 admitted to UMC Medical Center between April 12, 2020 and January 25, 2021. Results were reported with summative statistics such as mean and standard deviation along with percentages and counts for categorical values.

Summary of Results The average patient age was 29 ± 4.8 years, and 71.43% of patients identified their ethnicity as Hispanic or Latino origin. Average length of stay was 3.33 ± 3.56 days, and average number of weeks at delivery was 37.79 ± 2.27 weeks. No deaths were reported among the mothers, but there were three pregnancies that did not result in live birth. Notable findings were an increased rate of preterm birth (18.18%), an increased rate of NICU admission (16.67%), and an increased rate of gestational diabetes (13.89%) compared to national averages among pregnant women.

Conclusions Many of our findings confirmed the existing literature concerning pregnancy outcomes among COVID-19 positive pregnant women, including relatively high preterm birth and NICU admission rates. The number of women who identified their ethnicity as Hispanic or Latino was over-represented, which may be reflective of Lubbock’s overall demographics or health inequities in West Texas. Furthermore, our gestational diabetes rate was higher than the national average, potentially reflective of Lubbock’s high obesity rates. We recommend further research on the mechanisms of preterm birth in COVID-19 illness and ways to improve the health and healthcare equity of West Texas residents.

Abstract #587 Table 1

Univariate relative risk analysis looking at those who had overdosed on an illegal/alcohol/caffeine/inhalant drug versus those who had overdosed on prescription/over the counter drugs/unknown

<table>
<thead>
<tr>
<th>Variable</th>
<th>RR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.99</td>
<td>0.998</td>
<td>0.999</td>
</tr>
<tr>
<td>Age – quartiles &lt;= 33 (ref)</td>
<td>1.02</td>
<td>1.01</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>1.01</td>
<td>0.98</td>
<td>1.02</td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>0.96</td>
<td>0.99</td>
</tr>
<tr>
<td>Female</td>
<td>0.78</td>
<td>0.77</td>
<td>0.79</td>
</tr>
<tr>
<td>Border City – Yes</td>
<td>1.14</td>
<td>1.12</td>
<td>1.17</td>
</tr>
<tr>
<td>Hispanic – Yes</td>
<td>1.17</td>
<td>1.16</td>
<td>1.19</td>
</tr>
<tr>
<td>Atherosclerotic cardiovascular disease – Yes</td>
<td>1.15</td>
<td>1.13</td>
<td>1.17</td>
</tr>
<tr>
<td>Hypertensive heart disease – Yes</td>
<td>1.13</td>
<td>1.11</td>
<td>1.15</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (ref)</td>
<td>1.22</td>
<td>1.21</td>
<td>1.24</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1.03</td>
<td>0.99</td>
<td>1.07</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
not have a 16% (P<.0001) higher risk of overdosing on an illegal substance as compared to those who overdosed on legal prescription drugs.

**Conclusions** The trends in Texas mirror national trends with male gender and ages 35-45 as known risk factors. Preliminary results show that residing in a border county has a significantly increased risk of overdose with a nonprescription drug. Given the rise in illicit drug overdose in the country, this may be similar to that trend, or there may be barriers unaccounted for that prevent access to prescription drugs, leading to increased use of nonprescription substances.

**Abstracts**

**#588 CARDIOMETABOLIC PROFILE ASSESSMENT OF BARIATRIC SURGERY PATIENTS – A CASE SERIES**

E Varney*, RM Covington, D Gordy, ST Liette, CM Howard. University of Mississippi School of Medicine, Jackson, MS

10.1136/jim-2022-SRMC.590

**Purpose of Study** To correlate the distribution of adipose tissue loss, anthropometrics, and future cardiometabolic risk of bariatric surgical patients.

**Methods Used** For this prospective case series, 8 patients underwent surgical sleeve gastrectomy and completed at least a 6-month post-operative follow-up. Evaluations were conducted at each pre-operative visit, surgical visit and multiple post-operative visits (6-weeks and 6-months). Bone mineral density (BMD), lean body mass (LBM), total body fat (TBF), and visceral adipose tissue (VAT) were obtained from dual-energy X-ray absorptiometry (DXA) scans conducted at each visit. Vital signs, anthropometric measurements (including height, weight, and waist circumference [WC]) and fasting plasma blood samples were also collected at each visit to assess cardiometabolic function. Changes in DXA imaging metrics and associations relating anthropometrics to cardiometabolic outcomes were estimated with multilevel Gaussian mixed models with clustering at the patient level.

**Summary of Results** Each patient within this preliminary case series underwent successful sleeve gastrectomy resulting in significant weight loss with a mean weight loss of 30.2 pounds in 200 days post-operatively (95%CI 21.9 – 37.6, p<0.001). While accounting for age, sex, and race, the mean change in trunk and limb adipose percentage was not significantly different (p=0.411). The mean loss in VAT mass and volume was 339.8 kg (95%CI 222.2 – 457.4) and 369.4 cc (95%CI 242.4 – 496.5), respectively (p<0.001, for both). Although there was only a slight increase in mean BMD of 0.012 g/cm² (p=0.040), no patients experienced a decrease in BMD. When assessing the overall cardiometabolic health of these patients over time, with every 10 cm decrease in WC and 10% loss in body weight there was an average 9 mmHg and 11 mmHg drop in systolic blood pressure, respectively (p=0.039, p=0.001). Additionally, with every 10% loss in body weight, fasting blood glucose measurements dropped by over 10 mg/dL (p=0.048). Finally, when assessing liver function, there was an increase in albumin production by 0.18 g/dL with every 10 cm decrease in WC (95%CI 0.03 – 0.33, p=0.021).

**Conclusions** Sleeve gastrectomy results in significant loss of VAT with improvement in blood pressure, fasting glucose levels, liver function, and potentially BMD which all may be predictable with anthropometric measures.

**Abstract #588 Figure 1**

**#589 ASSESSMENT OF TUBERCULOSIS KNOWLEDGE, ATTITUDE, AND BELIEFS IN A NEW ORLEANS HIGH-RISK POPULATION**

1A Wang*, 1K Patwardhan, 2D Smith, 1T Santoro, 1F Sylvies, 1A Beilnap, 1R Byrne, 1R Klingsberg, 1J All. 1Tulane University School of Medicine, New Orleans, LA; 2Louisiana State University, Baton Rouge, LA

10.1136/jim-2022-SRMC.591

**Purpose of Study** TB is a communicable disease and one of the top 10 major causes of death worldwide. Despite a steadily declining statewide incidence rate of TB in Louisiana, the number of acute TB infections in Orleans Parish remains proportionately high compared to the national average. TB risk is skewed by gender and ethnic groups, and compounded by several factors such as homelessness, HIV infection, alcoholism, incarceration, and substance abuse. Assessing demographics and baseline knowledge of TB among these high-risk populations may inform recommendations to improve early case detections, patient adherence to medications, and integrate patient care and public health in diverse settings. In this study, we will develop and administer a questionnaire to assess the information and knowledge base related to TB among residents of inner city transitional facilities in New Orleans. Through better understanding of the knowledge gaps that exist within these communities, we can better design specific targeted education tools aimed at improving patient adherence to treatment and access to follow-up care, both of which currently represent major barriers to effective management TB in these high-risk populations.

**Methods Used** This study will be conducted at three Tulane University School of Medicine (TUSOM) student-run TB clinics; the New Orleans Mission (NOM), Ozanam Inn, (Oz) and Bridge House (BH). NOM is a men’s and women’s shelter for the homeless, abused, human trafficked, and addicts for men and women. Oz is a men’s shelter for the poor and undererved. BH is a men’s rehabilitation center for substance-use disorder. New clients receive a TuberculIn Skin Test (TST) also sometimes referred to as PPD test and long-term residents receive repeat TST testing every six months to screen for TB. Clients will be administered a questionnaire adapted from Dorji et al (2020) and the WHO guidebook for conducting Knowledge, Attitude, Practices (KAP) studies on TB. The responses will be self-administered. Data collected from the questionnaire will be described and analyzed using statistical software package (SAS, Cary, NC). Descriptive statistics will be performed to describe the demographic characteristics of our subject population. We will compare and cross-tabulate responses by subgroups to identify any significant relationships within or amongst cohorts. Univariate and multivariate logistic
regression will be used to check for associations with the independent variables.

**Summary of Results** Data collection will begin October 2021 and continue through January 2022.

**Conclusions** This study aims to identify specific targeted education tools that will improve patient adherence to TB treatment and follow up needed in the management of TB in this high-risk population.

### Abstract #590

**THE EFFECTS OF STATIN MEDICATIONS ON FATALITIES AND HOSPITALIZATION DURATIONS AMONG HISPANIC PATIENTS OF COVID-19**

S Khalafia*, F Dihovani. Texas Tech University Health Sciences Center El Paso, El Paso, TX

10.1136/jim-2022-SRMC.592

**Purpose of Study** Many individuals worldwide have been affected by SARS-CoV-2 in the 2019 global pandemic. Of these societies, the Hispanic population in the United States has significantly suffered. Hispanics have high rates of diabetes and obesity compared to non-Hispanic whites, leading to a larger morbidity and mortality rate due to the virus. Statin medications have been speculated to help with inflammation in these patients. In this study, statin medication is assessed in the outcomes of Hispanic patients infected with COVID-19.

**Methods Used** Through retrospective data collection, we scanned 4000 patient charts for Hispanic patients hospitalized with COVID-19 from March of 2020 to March of 2021. Patients who matched our inclusion criteria: adults aged 18 – 80 years, Hispanic ethnicity, positive test for COVID-19, and hospitalized at UMC for over 48 hours. The patients were grouped in statin and non-statin groups. All analysis was carried out using Stata V17.

**Summary of Results** Patients on statins were observed to be older (p<0.001) and have higher levels of LDL (p=0.02). In addition, they also had more comorbidities, such as diabetes (p<0.001), hypertension (p<0.001), hyperlipidemia (p<0.001), and dyslipidemia (p=0.22). We concluded that among Hispanic patients infected with COVID-19, patients administered statin did not have significantly different mortality (p=0.481), mechanical ventilation (p=0.975), ICU transfer (p=0.308), and O2 at time of discharge for living patients (p=0.779). Statin appeared to be a protective medication with regards to death, mechanical ventilation and ICU transfers in those patients who had experienced either a myocardial infarction, stroke, or pneumothorax. Patients who were prescribed statin as part of their treatment regimen were 64% less likely to die (p=0.014), 68% less likely to receive mechanical ventilation (p=0.004), and 76% less likely to be transferred to the ICU (p=0.035) as opposed to those who were not given statin.

**Conclusions** The results we obtained do not suggest the benefit or harm of using statins in the primary regimen for the treatment of COVID-19 infections in Hispanic patients. The results do however support the use of statin therapy in the treatment of COVID-19 infections in Hispanic patients who also have myocardial infarctions, strokes, and/or pneumothorax. More studies may need to be conducted to verify the efficacy of statin use in Hispanic patients infected with COVID-19.

### Abstract #591

**UNDERSTANDING COST AND FINANCIAL BURDEN OF GUN VIOLENCE IN A U.S. METROPOLITAN CITY**

TA Ramos*, J Silver, M Stamm, P Gladden, M Martin, MK Mulcahey. Tulane University School of Medicine, New Orleans, LA

10.1136/jim-2022-SRMC.593

**Purpose of Study** The cost of treating firearm-related injuries imposes a significant burden on the US healthcare system. In 2018, 26% of all fatal injuries among adults in Louisiana were due to firearms, with the state holding the third highest firearm homicide rate in the country. This study examined the healthcare cost and the association of injury severity with length of stay (LOS) and hospital charges.

**Methods Used** We conducted a retrospective cross-sectional analysis of 2016–2019 data from the Louisiana Hospital Inpatient Discharge Database (LAHIDD), a mandatory reporting system for all licensed hospitals in the state. Hospitals included were those in the Greater New Orleans area, defined by facilities within Orleans and Jefferson Parish north of the 29.85°N latitude. Patients 18 years and older at the time of hospitalization for GSW based on the International Classification of Diseases, Tenth Revision were included. Injury severity score was measured by the New Injury Severity Score (NISS), with high NISS defined as scores in the highest tertile. Primary outcomes included LOS and total hospital charges, defined as the total amount billed by the hospital for the patient encounter.

**Summary of Results** 1,751 GSW victims were identified. The patient sample was 87.7% Black and 83.4% male, with a mean age of 34 years and 6.9% mortality prevalence. 943 (63.4%) of GSW victims had Medicaid. The mean LOS was significantly different by NISS (p<0.001). High NISS was identified as factor having 3 times higher odds of hyponatremia, whereas 11% experienced hypomagnesemia (<1.5 mg/dL) and 7% hypocalcemia (<8.4 mg/dL). Statin medications were speculatively found to help with inflammation in these patients.

**Conclusions** The results we obtained do not suggest the benefit or harm of using statins in the primary regimen for the treatment of COVID-19 infections in Hispanic patients. The results do however support the use of statin therapy in the treatment of COVID-19 infections in Hispanic patients who also have myocardial infarctions, strokes, and/or pneumothorax. More studies may need to be conducted to verify the efficacy of statin use in Hispanic patients infected with COVID-19.

### Abstract #591 Table 1

<table>
<thead>
<tr>
<th>Outcome</th>
<th>NISS</th>
<th>Mean (SE) a</th>
<th>Unadjusted β (95% CI) b</th>
<th>Model 1 β (95% CI) b</th>
<th>Model 2 β (95% CI) b</th>
<th>Model 3 β (95% CI) b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Visit Charges</td>
<td>High NISS</td>
<td>21.9 (1.3)</td>
<td>10.28 (8.07, 12.49)</td>
<td>8.04 (6.45, 9.64)</td>
<td>7.95 (6.37, 9.54)</td>
<td>8.47 (6.89, 10.05)</td>
</tr>
<tr>
<td></td>
<td>Low NISS</td>
<td>11.6 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*#591 REFERENCES*

We refer to the literature for more detailed information on the methods used and the results obtained.
Renal, electrolyte and hypertension II
Concurrent session
1:00 PM
Saturday February 12, 2022

#592 ELECTROLYTE DISORDERS ASSOCIATED WITH THE USE OF IMMUNE CHECK POINT INHIBITORS: A SINGLE CENTER COHORT
10.1136/jim-2022-SRMC.594

Purpose of Study Electrolyte imbalances have been reported in association with exposure to immune check point inhibitors (ICI). However, the incidence of these disorders has not been established. Herein, we report a single center experience on the incidence of electrolyte abnormalities associated with ICI therapy as well as risk factors associated with their development.

Methods Used We conducted a retrospective review of medical records searching for patients who received ICI over a 10-year period at Ochsner Health. Demographic and clinical characteristics were extracted up to 1 year post ICI treatment. Common Terminology for Cancer Adverse Events version 5.0 criteria were used to grade the severity of electrolyte abnormalities. Risk factors were examined by logistic regression.

Summary of Results A total of 102 patients were identified. The mean age was 64 ± 11 years, 43% women, 82% of white race. Pembrolizumab was the most commonly used ICI (46%), followed by nivolumab (26%) and atezolizumab (15%). The mean baseline glomerular filtration rate is 58 ml/min. ICI was more frequently administered to patients with lung cancer (47%). The incidence of hyponatremia (<134 mEq/L) and severe hyponatremia (<124 mEq/L) were 17% and 2%, respectively. Hypocalcemia (<8.4 mg/dL) was observed in 7%, whereas 11% experienced hypomagnesemia (<1.5 mg/dL) and 3% hypokalemia (<3.4 mEq/L). Melanoma was found to be numerically associated with hyponatremia, but not statistically significant (OR 3.1, 95% CI 0.7–14.8). White race was associated with 3 times greater risk of hyponatremia with ICI therapy (OR 3.5, 95% CI 1.2–9.9). Although co-administration of cisplatin, underlying chronic kidney disease and use of SSRI are known risk factors associated with hyponatremia, those variables were not associated with hyponatremia in our cohort, suggesting that hyponatremia secondary to use of ICI could be mediated by a mechanism independent of those variables.

Conclusions Exposure to ICI is associated with the development of electrolyte imbalances. In our study, white race was identified as factor having 3 times higher odds of hyponatremia. Further studies are needed to examine race and other factors and the risk of hyponatremia in patients treated with ICI.

#593 ISOLEVUCLANDINS IN ANTIGEN PRESENTING CELLS PREDICT SALT SENSITIVITY OF BLOOD PRESSURE
1LA Erugul*, 1C Laffer, 1F Elifovitch, 1M Sahinoz, 1A Pfizer, 1RA Likier, 1A Krabo, 1Vanderbilt University Medical Center, Nashville, TN; 2VA Tennessee Valley Healthcare System, Nashville, TN
10.1136/jim-2022-SRMC.595

Purpose of Study We have shown that Na⁺ enters antigen-presenting cells (APCs) via ENaC. This activates NADPH oxidase and formation of isolevuglandins (isoLgS), which are highly reactive products of arachidonic acid oxidation. IsoLg-adducted proteins generate neoantigens that are presented to T-cells and trigger inflammation in hypertension. The isoLg response to salt is highly variable in human APCs. In this study, we explored whether the variability in isoLg formation relates to individual salt sensitivity of blood pressure and if isoLgs can be used to predict blood pressure response to changes in salt balance.

Methods Used We measured systolic blood pressure (SBP) and isoLg-containing APCs (dendritic cells [DC], CD14⁺16⁺, CD14⁺16⁻ and CD14⁻16⁻ monocytes) by flow cytometry and a specific antibody, in 10 hypertensive subjects who were off therapy for 2 weeks, before (B) and after in-patient 24 hr salt loading (HI, 460 mmol Na⁺) and salt depletion (LO, 10 mmol Na⁺/24 plus furosemide 40 mg x 3).

Summary of Results Age was 50.0±1.9, with 40% female, BMI 34.2±3.5 kg/m² and screening SBP 137.7±4.5 mmHg. Urine Na⁺ excretion was 175.2±17.6 in B, 374.2±24.4 in HI, and 28.6±2.9 mmol in LO after furosemide. SBP responses to salt loading varied from -4.7 to 9.1 mmHg and those to salt-depletion from +7.3 to -13.8 to mmHg. isoLgs were not different among B, HI or LO in any cell type. Baseline isoLgs correlated with changes in SBP (LO minus HI) in all three types of monocytes (p=0.017,0.02 and 0.032 for CD14⁺16⁺, CD14⁺16⁻ and CD14⁻16⁻, respectively) but not in DCs. The response of isoLgs to salt depletion (LO minus HI) correlated with changes in SBP (LO minus HI) in DCs (r=0.65, p=0.04), but not in monocytes.

Conclusions The direct correlation between changes in isoLgs and changes in SBP in response to salt depletion in DCs supports the view that oxidative stress in APCs is directly involved in the causation of the BP responses to changes in salt balance. The reason by which subjects with lower baseline monocyte isoLgs sustain larger reductions in BP during salt depletion remains to be elucidated. Perhaps those hypertensive subjects in whom APC oxidative stress is pre-stimulated by
factors other than salt, are more resistant to the effects of salt on BP. In any case, our results suggest that both baseline levels of isoLGs in monocytes and their changes during salt depletion in DCs are predictors of salt sensitivity that could be used as biomarkers. In the case of baseline isoLGs, this would be the first biomarker not requiring a protocol of salt loading and depletion to predict BP responses to salt, potentially making it a useful tool for diagnosis of salt sensitivity of BP in the clinic.

Purpose of Study We previously reported that raising mean arterial pressure (MAP) during treatment of hepatorenal syndrome type 1 (HRS-1) with vasoconstrictors (VC) is associated with improvement in kidney function. However, the optimal MAP target and factors associated with response to VC remain unclear.

Methods Used Records from hospitalized patients with HRS-1 treated with VC without shock were reviewed. We selected those who achieved ≥5 mmHg rise in MAP within 48 hours. We examined the relationship between the mean MAP achieved during the 1st 72 hours of VC therapy and the change in kidney function at 7–14 days as determined by serum creatinine (sCr). The primary (1ry) endpoint was >30% reduction in sCr without need for dialysis or death at day 14. The secondary (2ry) endpoint was change in slope of sCr from positive (worsening) to negative (improving) by day 7.

Summary of Results A total of 74 patients with HRS-1 treated for 2–7 days with either midodrine/octreotide (n=28) or norepinephrine (n=46) were included. Median age was 53 (IQR 39–67) years, 38% were women. White ethnicity was present in 19 (53%). The sensitivity of MBGC for ATI in 36 (73%) and non-ATI in 13 (27%). Among the 36 identified cases in which a kidney biopsy was performed as part of the clinical evaluation, we assessed the performance of acanthocyturia in the diagnosis of biopsy-proven GN. Acanthocyturia reflects glomerular hematuria and is highly specific for GN. The positive predictive value of acanthocyturia for GN diagnosis was 74% (95% CI 53–88%) and the negative predictive value 84% (95% CI 73–94%). Exclusion of patients with non-GN disorders resulted in a sensitivity of 80% (95% CI 65–90%) and specificity of 100% (95% CI 75–100%). The PPV of acanthocyturia for GN diagnosis was 77% (95% CI 61–88%). The specificity was 100% (95% CI 75–100%). The PPV of acanthocyturia for GN diagnosis was 77% (95% CI 61–88%). The sensitivity of acanthocyturia for GN diagnosis was 70% (95% CI 53–85%). Among those who progressed to residual CKD, 11 (11%) patients were declared to have end-stage kidney disease (ESKD) requiring dialysis. The summary of results pt with CoV-AKI who were discharged alive, 9-month follow-up data were retrieved in 97 (missing data in 18). Full recovery of kidney function was achieved by 76 (78%). Among those who progressed to residual CKD, 11 (11%) patients were declared to have end-stage kidney disease (ESKD) requiring dialysis.

Conclusions Full recovery from CoV-AKI was observed in 9/14 of those who remain alive post-hospital discharge. About 1/10th of patients with CoV-AKI reached ESKD at intermediate-term follow-up. Preexisting CKD is associated with lower rate of recovery in CoV-AKI. These data do not seem to suggest that CoV-AKI is associated with greater risk for development of CKD compared to other forms of in-hospital AKI.

Purpose of Study Microscopic examination of the urinary sediment (MicrExUrSed) can be a useful tool in the differentiation of acute kidney injury etiology. In particular, ‘muddy brown’ granular casts (MBGC) are thought to be pathognomonic for acute tubular injury (ATI). However, the ability of MBGC to predict biopsy-proven ATI has not been formally examined. Thus, we hypothesized that the identification of MBGC by MicrExUrSed can accurately predict a histopathological diagnosis of ATI.

Methods Used In a single-center prospective study, we selected cases of patients seen in nephrology consultation who had a urine specimen subjected to MicrExUrSed as part of the clinical evaluation. Within this cohort, we identified cases in which a kidney biopsy was performed within 2 weeks of the MicrExUrSed. Presence of MBGC in those cases was determined. We assessed the performance of identification of MBGC for the diagnosis of biopsy-proven ATI. Sensitivity, specificity, negative predictive values (NPV), and positive
predictive values (PPV) of MBGC to diagnose ATI were determined.

Summary of Results Among 371 patients in whom MicrExUrSed was completed, 49 underwent kidney biopsy and were included. Mean age was 61 years, 38% were women. White race accounted for 59% and black race accounted for 33%. Mean serum creatinine was 3.4 mg/dL. Biopsy diagnosis was ATI in 36 (73%) and non-ATI in 13 (27%). Among the 36 cases of biopsy-proven ATI, concomitant glomerular pathology was present in 19 (53%). The sensitivity of MBGC for biopsy-proven ATI diagnosis was 78% (95% CI 61–90%), while the specificity was 100% (95% CI 75–100%). The PPV of MBGC for ATI diagnosis was 100% (95% CI 100%) and the NPV was 62% (95% CI 47–93%).

Conclusions Our data demonstrate that MBGC on MicrExUrSed are pathognomonic for ATI confirmed by kidney biopsy – with high PPV and specificity of 100%. While MBGC reflect ATI, concomitant glomerular pathology can be present in patients with MBGC in the urine sediment.

#597 DICARBONYL L-XYLULOSE REDUCTASE (DCXR) AS A DIAGNOSTIC MARKER FOR MUDDY BROWN GRANULAR CASTS AND ACUTE TUBULAR INJURY

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Purpose of Study Detection of abundant ‘muddy’ brown granular casts (MBGC) during microscopic examination of the urinary sediment (MicrExUrSed) is pathognomonic of acute tubular injury (ATI). Because hospital laboratories do not optimally report MBGC, nephrologists have to independently perform MicrExUrSed. Thus, a diagnostic test to identify MBGC without performance of MicrExUrSed could be clinically useful. Unlike most AKI biomarker discovery approaches, we hypothesized that MBGC-enriched urinary sediment (MBGC-sedi) contains unique proteins that could serve as biomarkers of ATI.

Methods Used MicrExUrSed was performed in specimens from patients with acute kidney injury (AKI) seen for nephrology consultation with a suspected etiology of ATI. Specimens from 3 patients containing numerous MBGC (>10 per low power field in >50% of slide) were collected, subjected to low speed centrifugation (100 g), proteolytically digested and analyzed by nano-LC tandem mass spectrometry. Identified proteins were quantified by normalized spectral abundance factor (NSAF). Proteins were identified by MASCOT and accepted at <1% false discovery. Presence of proteins in casts was verified by immunofluorescence (IF) and western blotting (WB).

Summary of Results A total of 242 proteins were significantly more abundant in MBGC-sedi specimens compared to the supernatant (p<0.05). Among the identified proteins unique to the MBGC-sedi, we selected dicarboxyl L-xylose reductase (DCXR) as a candidate ATI biomarker because it was the protein with the lowest p value for MBGC-sedi specificity (p=0.00012, per NSAF) and only identified in MBGC-sedi. To validate the proteomics, in a separate set of MBGC-sedi specimens from patients with AKI due to ATI (n = 10), presence of DCXR was probed by WB and detected in 6 of 7 cases, and DCXR localization within MBGC by IF was verified in 3 of 3 cases.

Conclusions DCXR is abundant in MBGC-sedi and may be a biomarker of ATI as an etiology of AKI. DCXR is an enzyme expressed in the kidney, primarily localized in proximal tubuli, absent in glomeruli. At the cellular level, DCXR is involved in metabolic and osmotic stress detoxification. We conclude that urinary DCXR is a potential target molecule for ATI diagnosis.

#598 DETECTION OF URINARY ACANTHOCYTES FOR THE DIAGNOSIS OF GLOMERULONEPHRITIS


Purpose of Study Acanthocyturia is a specific indicator of glomerulonephritis (GN). However, it is reported that the sensitivity of acanthocyturia for the diagnosis of GN is merely around 50%. Examiner expertise is expected to affect the ability to identify urinary acanthocytes. Thus, we hypothesized that in a well-equipped laboratory with proficient observers, the sensitivity of acanthocyturia for the diagnosis of GN can be improved.

Methods Used In our institution, we have established a prospective data collection of individuals seen in nephrology consultation who had a urine specimen subjected to microscopic examination of the urinary sediment (MicrExUrSed) as part of the clinical evaluation. Within this cohort, we identified cases in which a kidney biopsy was performed within 2 weeks of the MicrExUrSed. We assessed the performance of acanthocyturia in the diagnosis of biopsy-proven GN. Acanthocyturia reflects glomerular hematuria caused by forms of glomerular disease characterized by injury to the endothelium, mesangium, glomerular basement membrane or blood vessel, but not injury to the podocyte that classically presents with proteinuria. Therefore, podocytopathies were grouped with other diagnoses (tubular, interstitial, etc.) as non-GN.

Summary of Results Among 405 patients with MicrExUrSed, 70 underwent kidney biopsy and were included. Mean age was 55 years, 50% were women. White race accounted for 52% and self-identified black race for 39%. Mean serum creatinine was 4.2 mg/dL. Biopsy diagnosis was GN in 27 (39%) and non-GN in 43 (61%). The sensitivity of acanthocyturia for GN diagnosis was 74% (95% CI 53–89%), while the specificity was 86% (95% CI 72–95%). Five of 6 false positive cases had diabetic nephropathy. The positive predictive value of acanthocyturia for GN diagnosis was 77% (95% CI 61–88%) and the negative predictive value 84% (95% CI 73–91%). Acanthocyturia was predominantly detected in pauci-immune GN and IgA nephropathy, with both diagnoses accounting for 14 of the 19 (74%) cases. The hospital laboratory did not report acanthocyturia in any case and misreported it as ‘yeast’ in 2 cases.

Conclusions With optimal proficiency, the sensitivity of acanthocyturia can be significantly greater than previously reported. Because hospital laboratories do not report it, attempting identification of urinary acanthocytes by nephrologists should be encouraged.
COVID-19 CAUSING MYOglobinuria REQUIRING HEMODIALYSIS IN YOUNG ADULT


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Introduction Cases of rhabdomyolysis causing myoglobinuria in post-COVID-19 patients have been seen occasionally, and exact mechanisms behind this seem multi-factorial. Some patients have severe myoglobinuria with highly elevated creatinine phosphokinase levels requiring urgent hemodialysis to keep creatinine and blood urea nitrogen levels under control and protect the kidneys from long-term damage.

Case presentation We present a case of a 24-year-old man with autism who was admitted to the hospital for COVID-19 viral pneumonia and discharged without major complications. After 3 weeks, he came to the ER with a decreased mental status and asterixis, and labs indicated creatinine had increased from baseline 0.7 mg/dl to 2.9 mg/dl and eventually increased to 6.4 mg/dl despite IV hydration. Creatinine phosphokinase was ordered, and it was 289,500 mcg/L. The patient likely suffered acute tubular necrosis secondary to rhabdomyolysis. Urgent hemodialysis was initiated, and the patient showed clinical improvement after one week and was taken off dialysis in 2 weeks. During an outpatient Nephrology clinic visit, the creatinine level was close to baseline level at 0.9 mg/dl, and the patient was asymptomatic.

Discussion Different viruses have been described to cause myositis and rhabdomyolysis. The list is long but not limited to influenza A and B, coxsackie, Epstein-Barr, herpes simplex, parainfluenza, adenovirus, cytomegalovirus, measles, varicella-zoster, human immunodeficiency, and dengue. In addition, reports about myoglobinuria post-COVID-19 infection have been emerging. The mechanism is unclear, but one theory suggests muscular necrosis from the direct viral invasion of myocytes, and another one suggests a toxic effect on myocytes by the host response, i.e., cytokine release and other immunological factors. Hence, early clinical recognition of this entity can be lifesaving in some cases.

THE EFFECT OF SLEEP DISORDER DIAGNOSIS ON MORTALITY IN END STAGE RENAL DISEASE PATIENTS

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Purpose of Study Chronic kidney disease (CKD) has been linked to increased risk of cardiovascular disease and all-cause mortality. Traditional cardiovascular risk factors such as diabetes, hypertension, hyperlipidemia, and smoking do not completely explain this increased risk. The hypothesis tested here is that non-traditional risk factors, such as sleep disorders, may increase mortality in patients with end-stage renal disease (ESRD).

Methods Used This study is a retrospective analysis of the United States Renal Data System (USRDS) database to determine the effect of sleep disorders on mortality in patients with ESRD. All ESRD subjects enrolled in the USRDS between 2004-2015 were eligible for inclusion. Subjects with missing or unknown age, race, sex, ethnicity, access type or dialysis, or with no follow-up were excluded. Diagnoses of sleep disorders were determined after start of dialysis and used International Classification of Diseases (ICD)-9 and ICD-10 codes and included diagnoses of hypersomnolence, insomnia, restless leg syndrome (RLS), and a composite of obstructive sleep apnea and central sleep apnea (OSA/CSA). The main outcome of interest was mortality. Time to death in months was determined from the date of first dialysis to death for those who died. For those who did not die, time to death was determined from the date of first dialysis to December 31, 2015. Cox proportional hazards (CPH) modeling was used to examine the risk of mortality due to the sleep disorders.

Summary of Results Among the 980,142 subjects in our sample, the prevalence of hypersomnolence was 0.5%, insomnia, 6.9%, RLS, 2.8% and OSA/CSA, 12.6%. The mean age was 64.9 years (SD=14.3) and 66% were white and 28% black, 44% female and 14% Hispanic. The majority had a catheter access type (82%) and were on hemodialysis (99.9%). The mean Charlson Comorbidity Index (CCI) was 7.0 (SD=3.9). In the final CPH model, the hazard ratios and 95% confidence intervals for hypersomnolence, insomnia, RLS, and OSA/CSA were 0.81 (0.78–0.84), 0.76 (0.75–0.76), 0.79 (0.77–0.80), 0.82 (0.81–0.82), respectively. Those with a diagnosis of hypersomnolence, insomnia, RLS, or OSA/CSA were at decreased risk of death after controlling for age, race, sex, ethnicity, access type, dialysis modality, and CCI. Increasing age, catheter or graft access type, and hemodialysis were associated with increased risk of mortality, while black race, other race, female sex, Hispanic ethnicity, and increasing CCI were associated with decreased risk of mortality.

Conclusions Our study suggests that diagnosing sleep disorders may impart a survival advantage in patients with ESRD.