Adult clinical symposium
9:30 AM
Thursday, February 25, 2021

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RECALCITRANT IRON DEFICIENCY ANEMIA AND NEUROPATHY AS A FACADE OF COPPER DEFICIENCY
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10.1136/jim-2021-SRMC.1

Introduction Copper deficiency is a commonly forgotten cause of anemia and myeloneuropathy, especially in malabsorption cases such as gastric bypass.

Case A 37-year-old lady presents to the clinic due to generalized fatigue, weakness, and bilateral foot pain. She had a past medical history of obesity with Roux-en-Y gastric bypass surgery six months ago. Initial workup revealed profound iron deficiency anemia (IDA), and treatment was started with parenteral and oral replacement. A few months later, her symptoms continued to deteriorate significantly despite aggressive supplemental iron therapy. She had persistent burning pain in both feet, lethargy, weight loss, and pagophagia for ice. Further workup revealed a severe copper deficiency, along with unchanced microcytic anemia. Rapid replacement with oral copper supplementation later improved her symptoms considerably.

Discussion Copper deficiency is relatively rare and is mostly seen in malnourishment cases. Malabsorption due to gastric bypass surgery has become an increasingly recognized cause. Still, copper levels are not as routinely monitored in the post-operative phase. The main hematologic alteration is anemia, which is often microcytic and hypochromic but may vary due to copper’s intricate involvement in erythropoiesis. More importantly, Copper deficiency can lead to persistent IDA despite aggressive replacement due to impaired iron metabolism, transport, and absorption. Other changes may include leukopenia and occasional neutropenia. Neurologic complications of copper deficiency are myelopathy with or without peripheral neuropathy. Clinically, this manifests in a similar pattern as subacute combined degeneration disease, making the diagnosis even more elusive. Symptoms are commonly localized to the lower extremities, manifesting as a progressive onset of ataxia, decreased sensation, neuropathic pain, and variable muscle paralysis. The treatment includes a rapid replacement of copper by parenteral or oral means.

The next day, labs showed an LDH=1,484, haptoglobin <30 and positive direct/indirect Coombs. SARS-CoV2 PCR was positive. IV Methylprednisolone was initiated at 1,000 mg. Within 24 hours shock ensued; respiratory failure developed requiring intubation and transfer to ICU for vasopressors. ID and hematology were consulted: AIHA with COVID-19 cytokine storm and multiorgan failure were diagnosed. Cytokine storm was managed with Actemra 162 mg/9 ml SubQ. Despite aggressive measures the patient died within 72 hours. Hgb trend during hospital declined from 5.6 mg/dl to 3.8 mg/dl despite transfusion.

Discussion Risks for severe COVID include HTN, CKD, and DM. Our patient had HTN, CKD, and obesity, portending high mortality risk. Average time before AIHA presentation is 4–13 days[1]. Our patients Hgb=5.6 gm/dl and Hct=16.2% on intake labs suggest rapid AIHA progression. Current literature supports glucocorticoid use in severe COVID. The RECOVERY trial showed decrease in mortality with dexamethasone of around 30% in oxygen dependent patients[2]. Our patient received high dose methylprednisolone, treating both AIHA and COVID cytokine storm. There was delay in obtaining blood product due to his cold agglutinin. While a causative link of AIHA cannot be directly demonstrated, temporality and prior cases strongly support COVID as the cause of hemolytic anemia. 1, 2 COVID treatment can be broadly grouped into direct viral targeting (remdesivir) and blunting excessive immune response (steroids/interleukin blocking agents). Glucocorticoids are the mainstay of treatment for AIHA and COVID-19, rendering the decision to use steroids during the concurrent presentation a logical choice.

REFERENCES

3
COVID ENCEPHALOPATHY WITH SEIZURES: NOT A NO-BRAINER
1G Dharmarapandi*, 1T Etare, 1) Dharmarapandi, 2A Akhter, 1K Shepherd. 1Texas Tech University Health Sciences Center, Amarillo, TX; 2Amarillo VA Health Care System, Amarillo, TX
10.1136/jim-2021-SRMC.3

Case Report A 72-year-old male with hypertension and coronary artery disease presented with a few hour history of acute aphasia and generalized weakness and a one week history of cough and myalgia. He has no history of CVA or seizures. On admission he had a fever of 100.9F with normal oxygen saturation, clear chest x-ray, and PCR positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). CT head showed old thalamic infarct.

Within hours of admission he became more withdrawn with decreasing alertness and ability to follow commands. While pending further investigation, he had two consecutively generalized tonic-clonic seizures. He was given levetiracetam and intubated with no further seizures. Neurologic examination showed the patient was minimally responsive to stimuli with no focal neurological deficits. He was initiated on empiric treatment for bacterial and viral meningitis.
MRI showed acute punctate pontine infarction. EEG showed nonspecific marked diffuse abnormality. Lumbar puncture with elevated WBC at 23 cells/μL, normal glucose, and elevated protein at 248 mg/dL. CSF was negative for every infectious etiology investigated. Based on clinical picture, EEG, MRI, and CSF studies, the patient was determined to have seizures secondary to COVID-induced encephalopathy.

Neurologic manifestations of SARS-CoV-2 are rare, with seizures being even rarer. Documented cases typically present as encephalopathy, encephalitis, and Guillain-Barre syndrome. It remains a diagnosis of exclusion as more common etiologies of encephalopathy and seizures need to be empirically treated and investigated. While it is thought that SARS-CoV-2 can cross the blood brain barrier by way of the olfactory nerve and bind to ACE2 receptors in the brain, there are no current recommendations for Dexamethasone or Remdesivir for neurologic symptoms alone based on the thought that CNS involvement from SARS-CoV-2 is not from the virus itself crossing the blood brain barrier by way of the olfactory nerve and bind to ACE2 receptors in the brain, there are no current recommendations for Dexamethasone or Remdesivir for neurologic symptoms alone based on the thought that CNS involvement from SARS-CoV-2 is not from the virus itself crossing the blood brain barrier given primary studies showing negative SARS-CoV-2 PCR in the CSF. Also, Remdesivir has poor CSF penetration. Based on the limited data out there regarding seizures due to SARS-CoV-2, antiepileptics like levetiracetam are recommended due to less potential side effects and drug interactions.

Case Report: Decompression sickness is caused by rapid changes in breath air pressure and increased amounts of oxygen and nitrogen in different body tissues. As the diver rapidly ascends, the air pressure substantially decreases creating air bubbles that can obstruct different blood vessels creating a wide variety of complications, including ischemia. With more than 9.5 million licensed divers, only 1,000 approximate cases of decompression sickness are reported per year, making it a rare diagnosis.

A 33 years-old male scuba diver was brought to the ED by ambulance after being found unconscious on the beach shore. Medical history consistent with MDD and cocaine dependence. While en route to the ED, he developed neck pain, and loss of muscle strength. Symptoms developed after five consecutives dives at 115 feet of sea water (fsw) without safety stops nor surface intervals. Spinal MRI was performed with findings consistent with acute isquemia at C6-T2 level. At this point the diagnosis of severe Caisson’s disease was made. Physical exam consisted of severe sensory neurologic impairment at level of T4-T5 dermatome accompanied by motor deficit with inability to flex hips, elevate legs against resistance, and left upper extremities motor deficit at level C8-T1. Immediately after diagnosis Hyperbaric Oxygen Therapy (HBO) was initiated. Follow up spinal MRI showed significant improvement of edema, however, patient’s neurological deficit persisted despite receiving five HBO sessions. At this point the decision to continue HBO was made. After the 12th session neurologic improvement was attained in the lower extremities. The patient completed a total of 20 sessions and regained complete movement and sensation in his body.

This case illustrates the potential complications of decompression sickness and the importance of a prompt identification and rapid treatment to diminish the neurological sequelae and irreversible damage. Identifying precipitant factors that could further aggravate the ischemic symptoms are essential to decide whether the patient will benefit from an extended treatment. The decision to lengthen therapy with HBO was conclusively beneficial despite delayed neurologic improvement. Ultimately, increasing the odds of motor and sensory function recovery.

Abstract 5 Table 1

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x=diagnosed with DVT; y=diagnosed with PV
Abstracts

6  A PAIN IN THE NECK: AN UNUSUAL PRESENTATION OF A RETROPHARYNGEAL ABSCCESS COMPPLICATED BY MEDIASTINITIS AND INTERNAL JUGULAR VEIN THROMBOSIS
ME Tomaso*, P Yedla. The University of Alabama at Birmingham School of Medicine Huntsville, Huntsville, AL
10.1136/jim-2021-SRMC.6

Case Report A previously healthy 35-year-old male presented to the hospital with five days of high-grade fever and mild posterior neck pain. There were no meningeal signs and he denied a history of recent oropharyngeal infection or trauma. Initial contrast CT of the neck was unremarkable; however, a chest CT was notable for bilateral mediastinal and hilar lymphadenopathy. Two days later, blood cultures returned growing Streptococcus anginosus which prompted a repeat contrast CT of the neck showing a retropharyngeal abscess (RPA) with extension into the right carotid space and superior mediastinum. The abscess was immediately drained and debrided using a flexible laryngoscope and required multiple washouts. This failed to resolve the mediastinitis leading to development of an empyema. Ultimately, the patient required video-assisted thoracoscopic surgery with pulmonary decortication and a prolonged course of antibiotics. The case was further complicated by internal jugular vein thrombosis, which was managed with anticoagulation. The patient was discharged after an extended hospital course and at last follow-up appears to have recovered well.

Retropharyngeal abscesses are rarely seen in adults and the incidence in an immunocompetent adult without history of preceding trauma is unusual. Fewer than five cases of traumatic adult RPA cases have been reported. This case illustrates the importance of having a high clinical suspicion for RPAs despite negative initial imaging. Two clinical pearls leading to repeat imaging in our case were (a) neck pain out of proportion to oropharyngeal exam and (b) the association of abscess formation with S. anginosus bacteremia in the head and neck. A rapid diagnosis is critical to reducing complications as this infection can spread rapidly through the cervical fascia into the mediastinum. This is a rare complication associated with a very high mortality rate up to 50%.

7  HEMOLYSIS IN A PRETERM NEWBORN BORN TO A MOTHER WITH HISTORY OF SARS-COV-2 INFECTION
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10.1136/jim-2021-SRMC.7

Introduction We present a case of a premature newborn born to a mother with known history of SARS-CoV-2 infection during pregnancy, who developed hemolytic anemia, thrombocytopenia and disseminated intravascular coagulation soon after birth.

Case presentation A 27 weeks preterm baby boy was born by cesarean section due to reversed end-diastolic flow and severe intrauterine growth restriction. Pregnancy was complicated by maternal history of systemic lupus erythematosus, chronic’s disease, and asymptomatic SARS-CoV-2 infection two months before delivery. He required positive pressure in the delivery room and was stabilized on continuous positive pressure. On the day of life (DOL) 1, he was found to be pancytopenic, followed on DOL 2, by mild disseminated intravascular coagulation (DIC), which responded to plasma, red blood cell, and platelet transfusions. There was evidence of intravascular hemolysis with elevated unconjugated bilirubin (7 mg/dL), lactate dehydrogenase (555 U/L), and plasma free hemoglobin (700 mg/dL). Coombs test and antibody screen were negative. Additionally, the patient had normocytic normochromic anemia (hemoglobin nadir 7.2 g/dL), high reticulocyte count, immature reticulocyte fraction, and nucleated red blood cell, as well as schistocytes on peripheral smear. The lupus anticoagulant panel was negative. Head ultrasound reported no intraventricular hemorrhage. The evaluation for sepsis was negative, SARS-CoV-2 antibodies were reactive. He was not tested for SARS-CoV-2 given the history of remote maternal infection and negative test at the delivery.

Discussion Hemolytic anemia has been reported in adults and children with SARS-CoV-2 infection and an underlying medical condition predisposing to hemolysis, but not in newborns. Growth restricted infants develop thrombocytopenia and neutropenia, usually accompanied by polychromatemia, and only in severe cases by anemia, but no hemolysis. Elevated levels of free plasma hemoglobin induce platelet activation and clotting cascade and may explain the mild DIC. While a direct causal relationship between presence of SARS-CoV-2 antibodies and hemolysis cannot be definitively proven, no other etiology for the development of hemolytic anemia was present.

8  MYOCARDIAL INFARCTION IN A NEONATE EXPOSED TO SEVERE PERINATAL ASPHYXIA
CM Manjunath*, S Liu, E Manci, R Bhat, KD Olma. University of South Alabama, Mobile, AL
10.1136/jim-2021-SRMC.8

Case Report Neonatal myocardial infarction is very rare, mostly ascribed to congenital cardiac and coronary artery malformations, and thromboembolic events. We hereby report an autopsy case of macroscopic MI in a neonate with normal cardiac anatomy, caused by perinatal asphyxia due to severe fetal anemia. We also report the challenges faced in making an accurate premortem diagnosis as the infant presented with myocardial dysfunction with consequent circulatory failure, which is also seen in infants following perinatal asphyxia.

A 36 wks male was born to a 24 y/o G2P1 mother via vaginal delivery after an uncomplicated pregnancy. At birth, the infant was severely depressed, needing PPV and intubation. The Apgar scores were 1 and 4 at 5 and 10 mins, respectively. ABG revealed severe metabolic acidosis. Signs of severe encephalopathy were noted on the exam; hence, therapeutic hypothermia was initiated. Antibiotics were started. As he continued to remain hypoxemic despite optimal ventilatory support, PGE1 infusion was started for suspected CCHD. CBC revealed severe anemia, for which volume resuscitation with crystalloid fluid and PRBC were done. Echo ruled out the

CAN BRONCHOSCOPY BE AVOIDED IN THE DIAGNOSIS OF CONGENITAL BRONCHOBILIARY FISTULA?

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Background Congenital bronchobiliary fistula (CBBF) is a potentially fatal anomaly characterized by an abnormal connection between the respiratory tree and biliary tract. Given its rarity, this lesion represents a unique clinical challenge for rapid identification and treatment. The objective of this report is to familiarize clinicians with this condition and to offer a streamlined diagnostic approach.

Case A term 2-day-old female presented with rapidly progressive respiratory distress and bilious sputum. Initial diagnostics eliminated intestinal malrotation, midgut volvulus, and tracheoesophageal fistula (TEF). Upon intubation, large amounts of bile were encountered. Chest/abdomen computed tomography (CT) with contrast confirmed an air-filled communication between the carina and the intrahepatic duct. Magnetic resonance cholangiopancreatography was used to rapidly rule out additional commonly associated biliary anomalies. Patient underwent thoracoscopic resection of CBBF and initially did well, but 3 days later deteriorated. Re-exploration with intraoperative cholangiography (IOC) revealed an atrctic extrahepatic common bile duct that had ruptured when the source of bile decompression, the CBBF, had been ligated. A drain was placed, and patient subsequently underwent Roux-en-Y hepaticojejunostomy for atresia 9 weeks later. Patient recovered well.

Conclusion When a neonate presents with bilious emesis, the critical first step is elimination of intestinal obstruction from the differential with an upper GI. An esophagram performed simultaneously can eliminate TEF. If there is no other apparent cause, bronchoscopy as the diagnostic gold standard has gradually been superseded by low dose chest CT and serves as the only exam needed to diagnose CBBF. A biliary system decompressed by a patent fistula decreases reliability of non-invasive imaging techniques thus IOC is imperative to rule out associated biliary anomalies. Neonates are among the most vulnerable for poor outcomes with airway manipulation and the mortality rate in CBBF is already 15.9%. With CT, there is no need to increase risk with bronchoscopy or other non-contributory tests.

UTILITY OF ECMO IN NEONATES WITH HYPOXIC-ISCHEMIC ENCEPHALOPATHY RECEIVING THERAPEUTIC HYPOTHERMIA: A CASE SERIES

B Johnson*, L Hannah, A Ruiz-Elizalde, A Makkar. The University of Oklahoma Health Sciences Center, Oklahoma City, OK.

Case Report About 25% of neonates with Hypoxic Ischemic Encephalopathy (HIE) undergoing therapeutic hypothermia (TH) develop pulmonary hypertension (PHT) and 4–9% of those require ECMO for refractory PHT. Currently, data is limited on the outcomes of patients who undergo both treatments concurrently or sequentially. In this case series, we report two cases of neonates requiring TH for suspected HIE and ECMO for refractory PHT. Patient A was delivered for suspected abruption and met cooling criteria based on seizure activity. He was actively cooling when he qualified for ECMO for severe PHT, with OI of 77. This patient was cannulated and underwent VA ECMO for 4 days which overlapped with the 72-hour of TH. Post cannulation, patient was cooled through the ECMO circuit. Patient B was delivered for Category 2 fetal heart tracings in presence of thick meconium and qualified for TH based on APGAR scoring, physical exam and cord gases. She required ECMO due to worsening PHT, with OI of 40, on the final day of TH. She was cannulated and underwent VV ECMO for 4 days. Patient A developed significant hemolysis due to malpositioning of the circuit pump head; there were no circuit complications for Patient B. Both patients were successfully decannulated and had grossly normal pre-discharge brain MRIs. This case series adds to growing evidence demonstrating ECMO use is feasible and safe in this high-risk population. We recommend individualized decision-making when treating patients with both PHT and HIE and suggest that successful ECMO runs with TH are indeed achievable.

PULMONARY HEMORRHAGE: AN UNUSUAL LIFE-THREATENING PRESENTATION OF FACTOR IX DEFICIENCY IN A MONOZYGOTIC-DIAMNIOTIC PREMATURE TWIN NEONATE


Pulmonary hemorrhage (PH) is a rare, life-threatening condition affecting premature infants. There is no single etiological explanation to PH, but some common denominators include the presence of extreme prematurity, respiratory distress syndrome, surfactant use, birth asphyxia etc. Its incidence is reported to be 0.5% to 11% with a mortality of about 50%[8]. Congenital bleeding disorders such as Hemophilia are rare coagulation disorders that have been known to present in early neonatal period with increased tendency for bleeding after blood draws, circumcision, surgical interventions, intracranial hemorrhage, oral or mucosal bleeding and very rarely as gastrointestinal hemorrhage. There are no reports so far in published literature of Hemophilia
presenting as PH in early life. We report an unusual primary presentation of Hemophilia B in a premature, mono- di twin with acute life-threatening PH with no family history of a bleeding disorder.

Case Report

Omphalomesenteric duct malformations are the most common congenital intestinal anomaly of which Meckel’s diverticulum is the most frequent, occurring in approximately 2% of the population. Complete persistent omphalomesenteric duct (OMD) is rare but can cause serious morbidity and mortality. In this case, we report an intestinal perforation near a patent OMD in a preterm infant who was being treated for necrotizing enterocolitis. On pathologic examination, gastric mucosa was identified within the OMD.

An 830 g SGA male infant was born at 30 weeks gestation following a pregnancy that was complicated by maternal preeclampsia. On DOL 1 he had scant meconium umbilical drainage which resolved spontaneously. Absent further meconium staining at the umbilicus conclusive for a patent OMD, conservative management was elected due to infant size and stability. His subsequent course was complicated by episodes of abdominal distention and emesis. On DOL 36, he developed umbilical erythema and serous umbilical drainage. Cultures of the fluid grew multiple organisms, and he completed an antibiotic course. He progressed to full feeds and did well until DOL 54 when he developed abdominal distension, pneumatosis intestinalis and was diagnosed with necrotizing enterocolitis. Medical management was attempted but on DOL 58 he experienced an abrupt clinical deterioration over an 8 hour period and was found to have pneumoperitoneum. At exploratory laparotomy, an isolated perforation was identified adjacent to the base of an OMD. The OMD was dissected from the base of the umbilicus and resected along with 4 cm of ileum. In the pathological examination, gastric mucosa was identified within the OMD. No evidence of NEC was found within the resected tissue.

This case highlights a rare early presentation of intestinal perforation associated with a patent OMD. Perforation has been reported with Meckel’s Diverticulum, but not with OMD nor in a preterm infant. Furthermore, the case describes the clinical course and complications associated with a patent OMD and may help clinicians in decision making related to management and timing of surgical intervention with OMD in the NICU setting.
Pediatric clinical symposium
9:30 AM
Thursday, February 25, 2021

ADVANCED SURVIVAL IN COMPLETE TRISOMY 13

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Case Report Trisomy 13, or Patau Syndrome, is caused by the presence of an extra chromosome 13. It was first described as a clinical syndrome by Patau in 1960 (Patau et al., 1960). The average survival for infants with trisomy 13 is only about 7 days (Duarte et al., 2004). Based on our literature review, there have been six cases of patients with trisomy 13 previously reported who survived past the first decade of life (Redheendran et al., 1981; Singh, 1990; Zoll et al., 1993; Tunca et al., 2001, Liliopoulos et al., 2005). We believe the patient, at 22 years of age, is the longest surviving male with complete trisomy 13. He is a Caucasian male who was born via cesarean section at 39 weeks gestation with a birth weight of 2.41 kilograms. Complete trisomy 13 was diagnosed prenatally by amniocentesis and karyotype. Cesarean section was performed due to congenital anomalies including omphalocele and ventricular septal defect. Other congenital anomalies diagnosed in this patient include cleft lip, cleft palate, Dandy Walker Malformation, coloboma, and dextrocardia. The patient underwent omphalocele repair, and a gastric tube was inserted on day two of life. Other corrective surgeries were done to repair the VSD, cleft lip and palate within the first two years of life. The patient has received nutrition exclusively through his gastric tube. Other major surgical procedures include a monti-Mitrofanoff for neurogenic bladder, hiatal hernia repair, and bilateral pressure equalization tubes. The patient was found to have hypogonadotropic hypogonadism that resulted in severe osteoporosis and growth hormone deficiency. He had a screening DXA scan which showed a Z-score -9.6 in his lumbar spine, and thoracic vertebral compression fractures on x-ray. Despite his complex medical history, he has had infrequent hospitalizations aside from planned surgeries. With aggressive speech, occupational and physical therapy he has developed and maintained some functional skills. The anomaly of this patient’s survival compared to other patients is an interesting study of the wide spectrum of sequelae and morbidity from complete trisomy 13. We believe this is consistent with previous studies that early repair of non-lethal heart defects and aggressive medical care in these patients may contribute to prolonged survival (Peterson et al., 2017).

AN UNWANTED SOUVENIR

C Joseph*, N Evans, E Klepper, M Bolton, PC Guillory. Our Lady of the Lake Regional Medical Center, New Roads, LA

Case Report Although echinococcal disease has a high prevalence worldwide, it is estimated that there are less than one per million inhabitants in the US affected each year. Even rarer, is disease with cysts in multiple body systems.

A six year old female with no past medical history presented to our Emergency Department with complaints of
right upper quadrant abdominal pain and distension with associated right neck and shoulder pain. Review of systems was positive for a 2 year long cough, which parents first noted after a trip to Morocco. On exam, she had a palpable abdominal mass, which prompted further imaging that revealed the presence of 2 right lung cysts and 2 liver cysts, the largest measuring 8 × 7 cm. Vancomycin and ceftriaxone therapy were initiated for potential bacterial superinfection. Hydatid disease was suspected and confirmed with echinococcus serology. Due to her rare presentation with both liver and lung involvement, treatment options lay outside current guidelines: lung lesions are typically managed with surgical removal, while liver lesions are typically managed with both anti-parasitics and percutaneous aspiration-injection-reaspiration (PAIR). Our patient was first managed surgically with removal of lung lesions via cystectomy with capitonnage. During the procedure, she had an anaphylactic reaction to the cystic fluid, which required ICU management. She recovered in a few days and was treated pharmacologically with two doses of albendazole. PAIR was then performed on liver lesions. Though she tolerated this procedure well, she continued to have intermittent fevers with leukocytosis and significant eosinophilia. Initial plan was to complete 3–6 months of albendazole, however, due to her persistent fevers, she was given 4 weeks of praziquantel, in addition to albendazole.

This case is of interest due to her rare presentation with both liver and lung cysts. According to UptoDate, 90% of cases consist of single organ involvement, and in 70% of cases only 1 cyst is identified. Further case reports on this disease could lead to more management options in multiple organ involvement. Furthermore, this case also allows us to consider ways pediatricians could conduct more routine travel screening and prophylaxis, including anticipatory guidance on appropriate travel practices.

### A CASE OF MYCOPLASMA-ASSOCIATED ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS

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Introduction Pediatric encephalitis is challenging to evaluate and treat given the variability of presentation. An etiology is identified in less than 50% of cases. Many studies reveal Mycoplasma pneumoniae as a common infectious agent. Anti-N-Methyl-D-Aspartate receptor (ANMDAR) encephalitis is an autoimmune condition that often manifests as a paraneoplastic phenomenon. However, the majority of affected pediatric patients do not have an associated neoplastic antigenic stimulus. There have been few documented cases of ANMDAR+ patients with serologic evidence of Mycoplasma infection. Here we present a 2-year-old with ANMDAR encephalitis secondary to M. pneumoniae.

Case Presentation A previously healthy 2-year-old female presented to the PICU with altered mental status, choreoathetoid and repetitive orofacial movements. Comprehensive autoimmune work-up was pending when M. pneumoniae serum IgM antibody was confirmed. MRI of brain and spine were normal with no demyelinating lesions. With concern for Mycoplasma-associated encephalitis, high dose corticosteroids, IVIG, and plasmapheresis were initiated. Her dyskinesia and dysautonomia persisted, requiring multiple psychotropic medications. Once ANMDAR antibodies were detected in the cerebral spinal fluid, second line therapy with weekly rituximab, biweekly IVIG, and high dose corticosteroids were initiated. CT abdomen and pelvis revealed no evidence of tumor. Clinical improvement may take up to 2 years following aggressive immunomodulating therapies. Our patient remains in critical condition and continues to be closely monitored for improvement.

Conclusion The recognition of M. pneumoniae and ANMDAR encephalitides as common causes of infectious and autoimmune encephalitis respectively, underscores the need for ongoing surveillance for Mycoplasma as an antigenic trigger for ANMDAR encephalitis. Mycoplasma is ubiquitous, making it challenging to identify it as a causative agent. The possibility of concomitant infectious and autoimmune encephalitis suggests that an infectious agent should not be accepted as the sole explanation. Strong consideration for an autoimmune etiology, even at initial presentation, will lead to early diagnosis, early treatment, and optimistically, better neurologic outcomes.
This patient was ultimately diagnosed with transient pseudohypoaldosteronism due to a UTI. Literature review showed multiple reports of a transient aldosterone-resistant state in infants with culture-confirmed UTI, many with co-existing structural renal disease. These patients presented with similar hormone and electrolyte abnormalities that resolved after antibiotic treatment, paralleling our patient’s course. Interestingly, the UTI was not immediately apparent in this case, given absence of fever and inability to communicate pain or discomfort, and it was discovered only after further history and workup.

**Case Report** Multisystem Inflammatory Syndrome in Children (MIS-C) is a rare, hyperinflammatory complication of SARS-CoV-2 infection. The diagnostic criteria established by the CDC require fever, laboratory evidence of inflammation, clinically severe illness requiring hospitalization with multisystem organ involvement, and evidence of current or recent SARS-CoV-2 infection.

**Case Description** A previously healthy eight-year-old male without clinical history of SARS-CoV-2 infection presented to the pediatric emergency department with a three-day history of fever and abdominal pain and was found to have acute acalculous cholecystitis. He quickly developed hyperinflammatory shock and had positive SARS-CoV-2 serology. Following treatment with intravenous immunoglobulin (IVIG) and high dose corticosteroids, his fever and shock quickly resolved. Acalculus cholecystitis resolved within two weeks of IVIG.

**Discussion** Presentations of MIS-C vary significantly and some documented cases more closely resemble severe COVID-19 or Kawasaki Disease vasculitis. This case is clinically and phenotypically distinct and represents the newly recognized hyperinflammatory physiology unique to MIS-C. It is important for pediatric clinicians who encounter any inflammatory disease process, including acalculus cholecystitis, to include MIS-C in the differential diagnosis.

Cardiovascular club

**11:00 AM**

**Thursday, February 25, 2021**

**Purpose of Study** Efferocytosis is a process by which apoptotic cells are cleared by phagocytic cells. Defective efferocytosis causes tissue necrosis leading to sterile inflammation, resulting in chronic inflammatory diseases, including atherosclerosis. In atherosclerosis, it is suggested that proteolytic cleavage of transmembrane receptor tyrosine kinases, such as MERTK (MER Proto-oncogene, Tyrosine Kinase), causes defective efferocytosis and promotes plaque progression. Reversion inducing cysteine rich protein with Kazal motifs (RECK) is an inhibitor of matrix metalloproteinases, whose role in macrophage efferocytosis is unknown. Further, we investigated the role of ADAM17, a member of the ADAM (a disintegrin and metalloprotease domain) family of metalloproteinases, in MERTK shedding.

**Methods** Used Bone marrow-derived macrophages were prepared from myeloid-specific RECK conditional transgenic mouse. MERTK mRNA and protein expression levels were assessed by RT-qPCR and western blotting. ADAM17 activity was assessed using fluorogenic ADAM17 substrate, Dabcyl-PRAAAHomopheTSPK(5FAM)-NH2. Efferocytosis activity was assessed using apoptotic Jurkat T cells as a bait.

**Summary of Results** Macrophages with RECK overexpression had elevated levels of MERTK protein, but not mRNA, compared to wild-type cells, suggesting posttranscriptional upregulation. Interestingly, ADAM17 activity was lower in RECK overexpressing macrophages by a significant 34% (P<0.05) vs. wild-type cells. In accordance with the elevated levels of MERTK, RECK overexpressing macrophages demonstrated higher efferocytosis activity by a significant 117% (P<0.05) compared to wild-type cells.

**Conclusions** Myeloid-specific RECK overexpression elevates MERTK protein levels, at least in part via ADAM17 inhibition, and promotes macrophage efferocytosis activity. Our findings suggest that RECK is a novel mediator of efferocytosis and has the potential to attenuate tissue necrosis and inflammation in atherosclerotic plaques.
The CRISPR-Cas9 system is most often used in vitro, delivered to cells through traditional methods of electroporation or microinjection. Most in vivo studies use viral vectors such as adeno-associated viruses and adenoviruses (AAV and AdV) and lentiviral vectors (LV) in rodents. The nature of most genome-editing technologies gives them potential to be effective in treating diseases that are caused by a single gene for which other medical treatments have been largely ineffective.

**Summary of Results** Researchers successfully identified cardiovascular disease causing genes for coronary heart disease, hypertrophic cardiomyopathy, WPW syndrome, and long QT syndrome. Using CRISPR/Cas9, these research studies successfully used CRISPR/Cas9 gene editing in vivo and in vitro to rid an organism or cell of the disease-causing mutation. The in vivo studies also showed decrease in symptoms of these diseases as well as an avoidance of off target effects and mosaicism.

**Conclusions** Overall, the CRISPR/Cas9 system shows promise in completely revolutionizing treatment of cardiovascular diseases and many other diseases. Current research offers potentially effective treatments using somatic and germline editing of disease-causing genes, however, clinical research does not go beyond applications in vitro and in small animal models.

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### Abstracts

**21 THE CLINICAL ROLE OF SUPERCONDUCTION AND ENTANGLEMENT WITH THE QUANTUM STATE IN PAIRED ISOLATED HEART MYOCITES-RELATED TO HEART FUNCTION**

1,2PI. Alteni*, 1W De Mello, 1N Escobales, 1,2Hl. Banchs. *University of Puerto Rico Medical Sciences Campus, San Juan; 2Cardiovascular Center of Puerto Rico and the Caribbean, San Juan, Puerto Rico

10.1136/jim-2021-SRMC.21

**Purpose of Study** Superconductivity (S.C.) is a concept of pushing materials to the extremes to get maximum results of the processes. The purpose of this study is to study the role of superconduction and entanglement in paired isolated heart myocytes, especially in left heart function (L.V.F).

**Methods Used** Applying superconductivity concepts experiments were done intracellularly in isolated heart cell pairs measuring intracellular electric conduction across junction gaps (G.I.) induced by Enalapril (E.) and Angiotensin II (Ang II). E. (25 ug/ml) was injected rapidly up to a dose of 1 ug/ml in 4 minutes. A plateau was reached at a value of 106% from the base. Ang II was injected at 1 ug/min with a reduction of G.I. (55%) without a plateau.

**Summary of Results** We think the reason for the plateau was a potential to cells through traditional methods of electroporation or microinjection. Most in vivo studies use viral vectors such as adeno-associated viruses and adenoviruses (AAV and AdV) and lentiviral vectors (LV) in rodents. The nature of most genome-editing technologies gives them potential to be effective in treating diseases that are caused by a single gene for which other medical treatments have been largely ineffective.

**Conclusions** Overall, the CRISPR/Cas9 system shows promise in completely revolutionizing treatment of cardiovascular diseases and many other diseases. Current research offers potentially effective treatments using somatic and germline editing of disease-causing genes, however, clinical research does not go beyond applications in vitro and in small animal models.

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**22 MACROPHAGE SPECIFIC IGF-1 DOWNREGULATES CXCL12 CHEMOKINE AND DECREASES Atherosclerotic BURDEN IN APOE-NULL MICE**

1P. Snarski*, 1S. Sukhanov, 1T. Yoshida, 1Y. Higashi, 1S. Danchuk, 1S. Shai, 2C. Bysani, 1P. Delafontaine, 1 Tulane University, New Orleans, LA; 2University of Missouri School of Medicine, Columbia, MO 10.1136/jim-2021-SRMC.22

**Purpose of Study** Insulin Like Growth Factor (IGF-1) has potent mitogenic and pro-survival effects. We have shown that systemic IGF-1 administration reduced atherosclerosis in ApoE deficient (Apo-null) mice fed a high fat diet and that those animals have reduced plaque macrophages. We have shown that IGF-1 is atheroprotective, but exact mechanisms still need to be identified. IGF-1 can act on all three major cell types in atherosclerotic plaque: macrophages, smooth muscle cells, and endothelial cells, and previous data shows a large effect on macrophages. We hypothesized that increasing IGF-1 levels strictly in macrophages will prevent atherosclerosis.

**Methods Used** Using a novel macrophage-specific IGF-1 over-expressing transgenic mice on an Apo-e-null background (Mf-IGF1 mice), we assessed atherosclerotic plaque burden, stability, and monocyte recruitment. We isolated plaque using laser capture microdissection and we analyzed monocyte recruitment via intravenous injection of fluorescent red beads among other traditional techniques.

**Summary of Results** Macrophage IGF-1 downregulated plaque burden by 30% (P<0.01), reduced plaque macrophages by 47% (P<0.001), and increased features of plaque stability. Monocyte recruitment was reduced by 70% (P<0.05) in Mf-IGF1 mice and was associated with a decrease in circulating levels of CXC Chemokine Ligand 12 (CXCL12) (27% reduction to control, P<0.05). CXCL12 protein levels were reduced in plaques and peritoneal macrophages in Mf-IGF1 mice. IGF-1 completely blocked oxLDL-dependant increase of CXCL12 mRNA transcription (98% reduction to control, P<0.01) and IGF-1 treatment reduced CXCL12 protein (56% decrease to control, P<0.001) in vitro.

**Conclusions** Overall, our results indicate that macrophage IGF-1 reduces atherosclerosis and reduces CXCL12, a chemokine newly implicated in atheroprogenesis. IGF-1 potentially exerts its atheroprotective effect via this reduction in CXCL12.

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**23 IMPACT OF OBESITY ON PATIENTS WITH ADULT CONGENITAL HEART DISEASE**

PP. Boddie*, MR. McMullan. University of Mississippi Medical Center, University of Mississippi Medical Center, Jackson, MS, US, academic/hospital, Jackson, MS 10.1136/jim-2021-SRMC.23

**Purpose of Study** Mississippi is a unique population in that it is among the states with the highest rates of obesity and cardiovascular comorbidities. Studies have suggested that risk factors for cardiovascular disease are associated with high mortality in patients with adult congenital heart disease (ACHD). Our retrospective cohort study will investigate obesity and the correlation between mortality and comorbidities such as hypertension (HTN), hyperlipidemia (HLD), and type II diabetes mellitus (T2DM) in Mississippi’s ACHD
Abstract 23 Table 1  Mortality rates by comorbidity

<table>
<thead>
<tr>
<th></th>
<th>ACHD</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLD</td>
<td>8.8%</td>
<td>5.0%</td>
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<tr>
<td>HTN</td>
<td>7.7%</td>
<td>4.6%</td>
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<tr>
<td>T2DM</td>
<td>8.9%</td>
<td>5.8%</td>
</tr>
</tbody>
</table>

Abstract 24 Table 1  Cardiovascular events in sports fans

<table>
<thead>
<tr>
<th>Studies</th>
<th>Sporting Event</th>
<th>Study Population</th>
<th>Cardiovascular Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilbert- Lampen U, et al., 2008</td>
<td>Soccer (FIFA World Cup 2006)</td>
<td>Greater Munich area</td>
<td>Increase of STEMI by factor of 2.49</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Increase of NSTEMI by factor of 2.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase of symptomatic arrhythmia by factor of 3.07</td>
</tr>
<tr>
<td>Niederseer D, et al. 2013</td>
<td>Soccer (FIFA World Cup 2006)</td>
<td>Germany (region of Bavaria)</td>
<td>No increase in total cardiac events</td>
</tr>
<tr>
<td></td>
<td>Rugby World Cup (RWC)</td>
<td>New Zealand</td>
<td>Semi-final loss in 2003 was associated with a 50% (p &lt; 0.01) increase in pooled heart failure admissions and a 20% (p &lt; 0.05) increase in pooled acute coronary syndromes admission.</td>
</tr>
<tr>
<td></td>
<td>tournaments</td>
<td></td>
<td>Increase in heart failure in women with a two-fold increase on match day and 2-days post</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Pooled relative risk of outside hospital cardiac arrest 1.033 (95% confidence interval 1.012 to 1.055; p = 0.002)</td>
</tr>
<tr>
<td>Onozuka D, et al., 2018</td>
<td>Professional Baseball Championship Series</td>
<td>Japan</td>
<td>Circulatory deaths (1.3024 vs 1.0665 for control days, p &lt;0.0001)</td>
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<tr>
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<td>Deaths from ischemic heart disease (0.8551 vs 0.7143 for control days, p &lt;0.0001).</td>
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<td>Deaths from acute myocardial infarctions (0.2770 vs 0.2322 for control days, p = 0.0213).</td>
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<td>Super Bowl-related days during the winning 1984 game were associated with a lower rate of all-cause death (2.1870 vs 2.3205 for control days, p = 0.0302).</td>
</tr>
<tr>
<td>Kloner RA, et al. 2009</td>
<td>American football Super Bowl 1980 and 1984</td>
<td>Los Angeles</td>
<td>No increase in rates of admission for AMI on the days of football matches involving Italy in either the single competitions or the three competitions combined</td>
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<td>Of the 10 studies reported hospitalizations due to non-fetal acute cardiovascular events, the pooled RR was 1.17 (95% CI 1.01–1.36).</td>
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<td>Of the 10 studies reported cardiovascular mortality the pooled RR was 1.03 (95% CI 1.00–1.05).</td>
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<td>Pooling of four studies where their national teams lost the MFTs produced a RR for the mortality of 1.19 (95% CI: 1.09–1.30).</td>
</tr>
<tr>
<td>Barone-Adesi F, et al., 2010</td>
<td>Soccer: World Cup 2002, the European Championship 2004 and the World Cup 2006</td>
<td>Italy</td>
<td></td>
</tr>
<tr>
<td>Wang H, et al., 2020</td>
<td>Meta-analysis of soccer tournaments</td>
<td>Multiple countries</td>
<td></td>
</tr>
</tbody>
</table>

**Abstract 23**

**Mortality rates by comorbidity**

In the ACHD population, findings may be applied towards management of Mississippi’s ACHD population. **Methods Used** Cohorts were generated using Qlikview Patient Cohort Explorer application. Subjects included were over 18 with a diagnosis of congenital heart disease. Searches were conducted inclusive of years 2013-present. Information regarding obesity and HTN, HLD, and T2DM was investigated. Obesity data was compared to a New York study. Mortality rate for each comorbidity was determined and compared to Mississippi’s general population. **Summary of Results** Our findings have shown that Mississippi’s ACHD population suffers from a higher prevalence of obesity and that the presence of HTN, HLD, and T2DM correlated with poor outcomes. These findings emphasize the importance of preventive measures when treating ACHD patients with regards to minimizing cardiovascular risks.

**Abstract 24**

**At the heart of the game: Are die-hard sports fans at risk of cardiac events?**

**Purpose of Study** This abstract aims to review the current understanding of the risk of cardiac events in die-hard sports fans as spectators of major sporting events. **Methods Used** Our review article contains a Medline search of studies published prior to July 20, 2020 identified with the following key words: ‘sports fans’, ‘spectators’, ‘sporting events’, and ‘cardiovascular risk’. Most literature to date centers around soccer, baseball, football and rugby. **Summary of Results** Multiple studies have shown that intense emotions and psychological stress have been associated with myocardial infarction, symptomatic arrhythmias, and sudden cardiac death. Similarly, die-hard soccer, rugby, football, and baseball fans seem to be at risk of cardiac events, particularly if a prior history of coronary artery disease is present (table 1). **Conclusions** Several studies have found an increased number of arrhythmogenic events including fatal arrhythmias, chest pain, unstable angina, acute coronary syndrome, and sudden cardiac death in patients who are sport spectators. High risk behaviors like tobacco use and binge drinking appear to contribute to this risk, generating a pro-
inflammatory state characterized by elevated levels of endothelin-1 and overexpression of sCD40L, sVCAM-1, MCP-1, and TNF-alpha. The outcome of the game and unexpected endings both seem to further promote negative cardiovascular outcomes.

Moving your clinical case presentation into a published manuscript
11:00 AM
Thursday, February 25, 2021
25 MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN OR INCOMPLETE KAWASAKI?
RA Salazar*, RD Smalligan, S Battle. UAB-Huntsville, Huntsville, AL
10.1136/jim-2021-SRMC.25

Case Report A 2yo girl presented with 7 days of fever as high as 103F. 5 days prior she was dx’d with OM and given amoxicillin, but fevers persisted. On day of presentation she had a new rash and eye redness without discharge. Prior to the illness she was exposed to her MGM who tested positive for COVID-19. Mom works as a nurse who interacts with COVID patients but was asymptomatic. PE: fussy but non-toxic appearing, T 98.1, HR 132, RR 38, BP 102/60 and O2 98% RA, HEENT: dry, cracked lips, injected conjunctivae, no cervical lymphadenopathy, lungs clear, heart RRR without murmurs, no hand or foot swelling but there was a desquamating rash on both LE. Labs: CRP 5.2, ESR >80, ferritin 66, Pro-BNP 182, WBC 14k, lymphs 15%, platelets of 677k. Patient was diagnosed with complete Kawasaki disease (IKD) with suspicion for COVID related MIS-C. She was treated with IVIG and aspirin. She started showing improvement and was discharged a couple of days later. Follow up echo showed slight dilatation of one coronary artery. Her COVID-19 test came back negative.

Discussion In 2020, with COVID-19 spreading across the world, IKD and MIS-C can be challenging to differentiate. Patients with IKD must have fever for at least 5 days while only 24 hours are required to be diagnosed with MIS-C. IKD patients must have 2-3 of the following 5 findings: bilateral conjunctival injection, changes in lips and oral cavity, cervical lymphadenopathy, swelling of the hands or feet and a polymorphous rash. IKD also requires positive coronary artery dilation on echocardiogram or elevated inflammatory lab values. Some MIS-C patients look very similar to IKD with a desquamating rash, mucous membrane involvement, and increased inflammatory markers. Even coronary artery dilation and aneurysms have been seen in MIS-C.

MIS-C patients are generally older (2–15yo), compared to those with IKD (1–4yo). MIS-C patients may have respiratory distress, vomiting and diarrhea or neurologic symptoms like headache and encephalopathy. They can also present with shock or an acute abdomen, which is uncommon in IKD. MIS-C patients tend to have far higher levels of Pro-BNP, CRP and D-Dimer compared to IKD. In the end, IKD and MIS-C can both be successfully treated with IVIG which makes the need to accurately differentiate between the two diseases less urgent.

Adolescent medicine and pediatrics
1:00 PM
Thursday, February 25, 2021
27 SOCIAL MEDIA AND GAMING USE NEGATIVELY IMPACTS YOUTH SCHOOL PERFORMANCE
A Yodoms*, SA Ray, D Wood, M Quinn, K Phalen. East Tennessee State University, Johnson City, TN
10.1136/jim-2021-SRMC.27

Purpose of Study Excessive video game and social media use has the potential to negatively affect youth academic performance, but a limited number of studies have comprehensively evaluated this relationship. The objective of this study was to
examine the relationship between youth social media and gaming (SM/G) habits and school performance.

Methods Used Using a convenience sample of adolescents (ages 12–17), a self-administered, confidential survey was fielded in two clinical centers. This report is on the first 145 patients enrolled from the ETSU Adolescent/Young Adult/Transition Clinic. This study is ongoing and data will be reported on a larger sample in the future. SM/G use patterns were assessed using questions adapted from the Common Sense Media national survey. Youth were asked to report hours spent daily on SM/G and to rate whether their SM/G negatively affected their homework or grades (scale: Never, Rarely, Sometimes or Often). Scales were re-coded to ‘never’ or ‘any’ for analysis of SM/G effects on homework or gaming. Bivariate and multivariate analyses were used to determine important associations.

Summary of Results Of the 145 respondents, the mean age of the sample was 14.9 (SD = 1.4) with 51.7% identifying as female. Over a quarter of the sample reported spending 5 or more hours gaming per day (27.6%), while 37.1% reported using social media for 5 or more hours per day. 33.8% of youth reported that gaming negatively affected their grades and 42.8% reported that it impaired their ability to complete homework; 27.6% of youth reported that their social media use negatively affected their grades and 44.1% reported that it impaired their ability to complete homework. Males were much more likely to report that gaming affects their grades (OR = 2.2, CI: 1.06–4.44, p = 0.033) or homework (OR = 2.5, CI: 1.26–4.97, p = 0.009).

Conclusions A large proportion of both males and females report high use of social media and gaming, to the extent that it affects their school grades and their ability to complete homework. However, males were much more likely to be negatively affected by excess gaming.

PROMOTING LITERACY AMONG INFANTS 0–6 MONTHS IN PRIMARY CARE CLINICS
S Rolader*, A Caldwell, M Dunlap, C Garbe. Oklahoma University Health and Sciences Center, Oklahoma City, OK

Purpose of Study Pediatricians have a unique opportunity to help families during early childhood to improve language development and promote literacy. Reach Out and Read (ROR) is a program that promotes early language skills and literacy. Utilizing ROR at well child visits (WCV) for infants less than six months has not been well studied. This study evaluated literacy promotion practices for infants under 6 months of age among pediatric faculty and residents at two pediatric practices.

Methods Used Parents who presented for their child’s WCV at 2 weeks, 2 months, and 4 months were surveyed by an anonymous paper survey to see what literacy based guidance was provided. Pediatric residents and faculty members were sent an anonymous electronic survey to assess literacy promotion behaviors and perceptions among infants under 6 months. Descriptive statistics were used for each survey question and differences in responses between residents and faculty were analyzed using chi square tests.

Summary of Results Seventy-four parent surveys were completed. During their clinic visit, 43% of parents reported their provider discussed reading, 42% the benefit of reading aloud, 38% how to read with your child, and 57% the importance of talking to your child. Close to 90% of residents and faculty reported it is the job of pediatricians to assess and encourage reading among infants under 6 months, and nearly 100% reported it is the job of pediatricians to assess and encourage caregivers to talk to infants under 6 months. All faculty either agreed/completely agreed that they felt adequately trained to speak with caregivers about reading and talking to children 0–4 months of age while only 64% of residents did (p = 0.002). Most faculty (93%) reported comfort in discussing reading with parents of young infants compared to 85% of residents (p = 0.04).

Conclusions While the clinics studied did not formally include infants under 6 months in their ROR program, providers are providing guidance to many of these families in accordance with the AAP national guidelines. There is a need for literacy promotion training for young infants, especially among pediatric residents and this could result in improved literacy outcomes for children.

EVALUATION OF A STANDARDIZED PATHWAY FOR TREATMENT OF PATIENTS WITH DIABETIC KETOACIDOSIS IN A PEDIATRIC EMERGENCY DEPARTMENT

Purpose of Study We implemented a standardized care pathway for patients with Diabetic Ketoacidosis (DKA) in the Emergency Department (ED) of our freestanding children’s hospital. We sought to determine the impact of the pathway on the time to resolution of acidosis.

Methods Used This retrospective study included children 24 months through 17 years with DKA treated in our ED. We compare outcomes for patients 2 years prior (pre-group) and 2 years following (post-group) pathway implementation in May 2015. Patients were identified in our EHR using ICD-9 & 10 codes for DKA. Resolution of acidosis was defined as serum bicarbonate (HCO3) > 15 mmol/L or anion gap ≤ 15 mmol/L. Data collected included demographics, initial serum HCO3 level and anion gap, times when initial serum HCO3 and anion gap were recorded, and times when serum HCO3 > 15 mmol/L and anion gap ≤ 15 mmol/L. Descriptive statistics were performed for frequencies and proportions, median [interquartile range (IQR)], and Mann-Whitney U test was used to compare the time to resolution of acidosis between pre- and post-implementation groups.

Summary of Results We evaluated 500 cases of DKA, with 250 in each group. The pre-group was 40% male; median age 12 years (IQR 10–15); and 52% white. The post-group was 44% male; median age 13 years (IQR 10–15); and 67% white. The median initial serum HCO3 was 9.1 mmol/L (IQR 6.6–12) in pre-group compared to 9.9 mmol/L (IQR 7.7–12.7) in post-group. Median initial anion gap was 26 mmol/L (IQR 23–31) in both groups. The median time to normalization of serum HCO3 was 9 hours (IQR 6–12) in pre-group and 8 hours (IQR 6–13) in post-group (p = 0.74). The median time to normalization of anion gap was 7 hours (IQR 5–10) in pre-group and 7 hours (IQR 6–10) in post-group (p = 0.64).
Conclusions While implementation of a standardized pathway for the treatment of DKA patients led to faster resolution of acidosis, this was not statistically significant. Further studies should evaluate elements of a DKA pathway that may be associated with improved outcomes.

Purpose of Study To evaluate and describe firearm-related injuries in Mississippi children from 2012–2019.

Methods Using the Mississippi (MS) Trauma Registry, we identified patients aged 0–15 years who sustained a firearm-related injury from 2012–2019. For the purpose of this study, a firearm is any weapon utilizing explosive propellant. A retrospective chart review to verify data was performed on patients treated at University of MS Medical Center (UMMC), the only pediatric trauma center in MS. Data included demographics, injury details (fatal, self-inflicted, accidental/assault, weapon, etc.), Trauma Injury Severity Score (TRISS), medical care (surgery, ICU care, length of stay, etc.), and location where injury occurred. Data was maintained in RedCap, a secure web-based platform. Preliminary data analysis is described.

Summary of Results We received 403 patients; 183 were determined to have a firearm-related injury. Of those, 53% were assault or suicide attempt; 42% were accidental. Only 20% were self-inflicted. Majority were male (76%) and African American (74.9%). Most (72%) involved the use of a handgun/pistol. Half (51%) required surgery, and a third (34%) required ICU care. Based on the TRISS, the cohort’s average probability of survival was 89%. Only 11% were fatal; our dataset did not include children who died at the scene and did not receive medical care. Over the time period studied, we found a trend toward an increasing number of firearm-related injuries in MS children each year. One third of injuries occurred within the Jackson Metro area; the remainder were in surrounding counties.

Conclusions Firearm injuries in children can lead to significant injury and morbidity. Our study sought to describe the impact of firearm injuries on MS children. The preliminary data included here begins to illustrate the burden of care related to firearm injuries; further statistical analysis will be conducted and may reveal important information about hospital cost, long term morbidity, and specific populations at risk. MS leads the nation in gun violence and our study shows an increasing trend in firearm injuries annually as well. Data about hospital utilization, cost, and geographic ‘hot spots’ for firearm violence may lead to effective changes in community engagement and legislative policy toward lowering rates.

Purpose of Study Firearm-related injuries are the second leading cause of pediatric death in the US. The aim of this study was to analyze trends of pediatric firearm injuries & deaths in a high-risk southern state and identify the populations at most risk.

Methods A retrospective chart review of 1) firearm-related hospitalizations at the state’s only freestanding children’s hospital and 2) the local county medical examiner’s office records of firearm-related deaths was conducted from 2000–2019. Data collected included basic demographics, year of injury, intentional/unintentional injury, shooter age, circumstances of incident, and clinical outcome. Descriptive statistics were performed for frequencies, proportions, and median interquartile range (IQR).

Summary of Results 540 patients were enrolled in the study (76% from hospital records, 24% from medical examiner’s records). The annual number of firearm-related injuries & deaths rose by nearly 176% (2.76x) from 2000 to 2020. Ages of victims ranged from 1 month to 19 years (median 14, IQR 9–16). Males accounted for 3 out of every 4 victims (76%). African Americans were the most affected ethnicity (71%). Intentional injuries (53%) were more common than unintentional injuries (35%), but unintentional injuries increased at a faster rate over time. 1 out of every 4 children were injured while playing with a firearm. The age of the shooter ranged from 1–47 years (median 14, IQR 9–17). Death (31%) was the most common outcome and 13% had long-term disability.

Conclusions In a state with high firearm ownership and death rates, annual pediatric firearm injuries and deaths rose by nearly 3 times in 20 years. Firearm injuries affected a wide range of ages and have high mortality. African Americans, males, and children > 12 years of age were disproportionately affected. With unintentional injuries on the rise, pediatricians need to counsel families on the importance of safe firearm storage.

Purpose of Study Children who come to the emergency department (ED) with fractures often require sedation and analgesia for reduction. Evidence demonstrates intranasal (IN) analgesics provide a rapid and effective means of pain control. When these injuries call for closed reduction, IVs are used for procedural sedation and analgesia (PSA). If adequate PSA could be achieved via the IN route, this could forgo the need for IV. There is evidence to suggest a role for IN Ketamine for PSA. A pilot study suggested 9 mg/kg IN ketamine for PSA during laceration repairs. The efficacy of IN ketamine for PSA has never been studied head-to-head with comparators such as IV ketamine.

Methods This is a prospective, randomized controlled, non-inferiority trial of children ≤ 25 kg with non-operative fractures undergoing closed reduction. Patients will be randomized to 1 of 2 groups to receive 9 mg/kg IN ketamine or 1.5 mg/kg IV ketamine. To ensure blinding, all...
subjects will have IV access and first receive IN medication [ketamine or hypertonic saline (3%)] followed by IV medication (normal saline (NS) or ketamine, respectively). Adequate sedation will be determined by a modified Ramsay sedation score of \( \geq 4 \). Scores will be assigned every 5 minutes. Sedation failure will be defined by a score < 4 after 10 minutes; in these cases, patients will receive 0.5 mg/kg IV ketamine or more as deemed necessary by ED physician to complete reduction.

**Summary of Results** This study is currently in the enrollment process. The primary outcome is the proportion of successful sedations between the two study groups. With a non-inferiority margin of 10%, one-sided alpha of 0.025, and power of 90%, we anticipate a sample size of 70 participants to detect PSA completion comparison of no greater than a 2% difference in proportion of successful sedation between groups. Categorical and continuous variables will be analyzed using statistical tests with 95% confidence intervals.

**Conclusions** The aim of this study is to investigate whether IN ketamine is both feasible and efficacious for PSA, compared to IV ketamine, during closed reduction of isolated non-operative fractures.

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**Case reports in cardiovascular medicine**

1:00 PM

**Thursday, February 25, 2021**

**33** **AN UNEXPLAINABLE CASE OF CARDIOMYOPATHY AFTER COVID LIKE SYMPTOMS**

P Sobash*, S Wang, C Jeukeng, K Vedala, R Kamoga. White River Medical Center, Batesville, AR

10.1136/jim-2021-SRMC.33

**Case Report** The most common cause of congestive heart failure is ischemic cardiomyopathy. Workup of new onset CHF consists of laboratory values, physical exam, symptoms, echocardiogram and potentially a left heart cath. When readily apparent causes are absent, careful history can help determine an underlying etiology. We present the case of a 49-year-old African American female with newly diagnosed CHF with significant weight gain over the past few months. Patient has a smoking history, asthma and non-convulsive seizures. Her only home medications are inhalers. She states that back in February of 2020, she had COVID like symptoms, including fevers, chills, and episodes of delirium. She never underwent diagnostic testing, but self-quarantined for 2 weeks with mild improvement. Since that time, she has had respiratory issues that have not resolved. In June, she was seen at our center for a cholecystectomy and ventral hernia repair with subsequent orthopnea, PND’s, and worsening lower extremity swelling edema with 50 lb weight gain. Laboratory values on admission showed proteinuria, slight hyponatremia at 134 mmol/L, BNP of 6220 pg/mL, Hgb A1c of 6.3%, and slight elevation of AST and ALT at 59 U/L and 36 U/L respectively. Workup for other endocrinological abnormalities was negative. Echo revealed EF of <20% and she was started on appropriate therapy with some resolution of symptoms while inpatient. A left heart catheterization revealed no ischemia, prompting the question of why she developed such pronounced heart failure at age 49 with few risk factors. We were unable to obtain a biopsy of the heart to assess for viral myocarditis. While the pathophysiology of COVID induced cardiomyopathy is still unclear, it is thought to be due to a cytokine storm resulting in organ damage. With no other seemingly identifiable cause, even with a negative IgG test, we suspect that her heart failure is secondary to recent COVID infection. The teaching point of our case is when there is heart failure failure suspected to be secondary to myocarditis, especially with a history of suspected or confirmed COVID, then further workup with heart biopsy or MRI should be performed to look for myocarditis to help confirm diagnosis.

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**Case Report**

**Group IV Pulmonary Hypertension refers to thromboembolic obstruction of the pulmonary arteries which can lead to right heart failure and death without early diagnosis and intervention. Here, we report a case of Chronic Thromboembolic Pulmonary Hypertension (CTEPH) with right ventricular failure in the setting of Essential Thrombocytopenia (ET).**

A 36 year old African-American female with asthma presented with difficulty breathing. She reported worsening of symptoms over 1 year. Physical exam was remarkable for pitting lower extremity edema to bilateral mid-thighs and jugular venous distension. Labs were notable for platelets 620,000/UL, pro-BNP 2268 pg/mL, and D-dimer 1307 ng/mL. Transthoracic echocardiogram showed a dilated main pulmonary artery, enlarged right ventricle (RV), and dilated right atrium. Estimated RV systolic pressure was 65 mmHg, and left ventricular ejection fraction was 60%. Computed tomography revealed acute and chronic bilateral pulmonary emboli, interventricular septal flattening, and a 1.8 centimeter RV thrombus. She was started on warfarin with heparin bridge. Right heart failure was treated with digoxin and furosemide which alleviated symptoms of dyspnea. She later tested positive for JAK2 V617F mutation, leading to a diagnosis of ET. Hydroxyurea therapy was initiated. Currently, she is being evaluated for surgical management with pulmonary thromboendarterectomy.

**CTEPH** is a rare cause of pulmonary hypertension with associated high morbidity and mortality. Those with chronic myeloproliferative diseases (CMPD) like ET are at increased risk of thrombosis which can lead to CTEPH. Early detection and intervention are crucial since patients can be cured surgically. Identifying CMPD is necessary, as these disorders allow for alternative treatment options. A high level of suspicion is important, as 25% of patients have no history of thromboembolic event. This case demonstrates that CTEPH should be considered in patients with unexplained exertional dyspnea with or without prior history of a thromboembolic event.
Abstract 35 A CASE OF REFRACTORY CARDIOGENIC SHOCK CAUSED BY ZINC PHOSPHIDE TOXICITY

10.1136/jim-2021-SRMC.35

Introduction Zinc Phosphide is a highly toxic rodenticide and is used worldwide to protect grains from rodents. Upon ingestion, Zinc phosphide is converted by gastric acid into Phosphine gas, which get absorbed very quickly into the bloodstream. It inhibits the oxidative phosphorylation within a few hours, causing myocardial stunning. Death usually occurs from cardiac arrhythmias and refractory cardiogenic shock.

Case presentation A 20-year-old male patient, known to have bipolar disorder, presented to the ED after ingesting a zinc phosphide tablet trying to attempt suicide. He complained of only nausea upon presentation. At the ED, he was hemodynamically stable. Arterial blood gases showed a PH of 7.34, and bicarbonate of 19. He was immediately started on activated charcoal after gastric lavage. He was admitted directly to the medical ICU. A TTE was emergently done in the MICU and showed an EF of 54%. In the MICU, his ABGs showed a PH of 7.23 and bicarbonate of 13. He was started on Naxium drip to suppress gastric acidity, and sodium bicarbonate. His blood pressure started to drop in a few hours, so he was started on noradrenaline infusion. Another TTE was done after 6 hours and showed an EF of 20%. He was started on dobutamine infusion. The patient had cardiac arrest the next day from refractory cardiogenic shock despite the resuscitative measures.

Discussion Zinc phosphide toxicity is a rare entity that presents more among farmers in developing countries because of the easy access. The phosphine gas released after the ingestion inhibits cytochrome c oxidase, disrupting the mitochondrial physiology and oxidative phosphorylation. This mechanism is responsible for the lethal side effects of zinc phosphide toxicity. Toxicity usually occurs within minutes of exposure, and symptoms include gastrointestinal irritation marked by nausea, vomiting, hematemesis, cardiogenic shock with refractory hypotension caused by direct cardiac toxicity, arrhythmias, hemorrhagic pulmonary edema with tachypnea, cough, acute respiratory distress syndrome, and respiratory failure. The mortality rate is very high within the first day of therapy. Management usually is supportive treatment. No antidote has been proved effective against zinc phosphide toxicity.

Abstract 36 Figure 1

Abstract 36 CARDIAC TAMPObade SECONDARY TO COVID-19

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10.1136/jim-2021-SRMC.36

Case Report As the COVID-19 pandemic unfolds across the globe the spectrum of clinical presentations has grown. It has become clear that this virus significantly effects the cardiovascular system causing myocarditis, pericarditis, and pericardial effusion. So far, cardiac tamponade has been scarcely reported in COVID-19 patients.

A 51 year old obese, hypertensive, African American female presented with pleuritic chest pain and worsening dyspnea on exertion. She had been on day 5 of COVID-19 illness. At presentation, heart rate was 115 bpm, blood pressure was 95/50 mmHg and cool extremities were noted. EKG was significant for low voltage complexes and diffuse ST elevations. Initial Troponin T was 0.93 ng/ml. CT chest revealed scattered, patchy, bilateral ground glass opacities. TTE revealed a small effusion with inflammatory exudate, late diastolic collapse of the right atrium, compression of the right ventricle, excessive respiratory variation of the mitral and tricuspid valves, and an EF of 20%. Intravenous fluids were initiated and pericardial window was planned for the following day. However, at 12 hours of admission to the ICU, the patient developed a ventricular fibrillation cardiac arrest. Emergent bedside pericardiocentesis was performed, there was subsequent refractory PEA arrest and the patient expired at 13 hours of presentation.

COVID-19 has only been reported in a handful of case reports as being a cause of cardiac tamponade. COVID-19 has been reported to trigger an exaggerated systemic inflammatory response in patients and has been implicated in many cases of myocarditis/pericarditis which makes the proposed mechanism of this disease process very plausible.

Abstract 37 TREATMENT OF CHYLOTHORAX FOLLOWING CORONARY ARTERY BYPASS GRAFTING WITH THORACIC DUCT EMBOLIZATION

1MH El-Farra*, 2N Pham, 3J Smith, 3M Kajitani, 3N Hanaiana. 1University of California Riverside, Riverside, CA; 2Saint Bernardine Medical Center, Saint Bernardine Medical Center, San Bernardino, CA, US, hospital, San Bernardino, CA; 3Loma Linda University Adventist Health Sciences Center, Loma Linda, CA
10.1136/jim-2021-SRMC.37

Introduction Chylothorax is a rare complication after coronary artery bypass grafting (CABG). We present a case of chylothorax post-CABG that was treated with embolization of the thoracic duct.

Case Presentation A 60-year-old male underwent a successful CABGx4 using the left internal mammary artery to the left anterior descending artery. Postoperatively, the chest tube’s output was 500–600 mL/day. On post-operative day 4, the chest tube’s drainage turned into orange milky fluid that was confirmed to be chyle. Initially, he was treated conservatively with fasting, total parenteral nutrition, and octreotide
intravenously for 10 days. Initially there was improvement of both chest tube output and consistency of the drainage. However, the drainage returned back to high output chyulous drainage after beginning oral feeding.

After failure of conservative medical treatment, thoracic duct embolization was planned. Lymphangiogram was performed, and no leakage could be found even after challenging him with a fatty meal. There was retrograde reflux of contrast from the upper thoracic duct into upper mediastinal/periaortic lymphatics. The thoracic duct was embolized with platinum coils and nBCA glue.

The patient was kept NPO on total parenteral nutrition for three days post coiling then oral feeding was started and advance from liquid to regular diet. The chest tube output continued to be clear and the output was minimum. The drains were removed on post-operative day 3, and the patient was discharged home. On two weeks follow up, the patient returned with no complications and continues to be stable.

**Conclusion** The current treatment options for chylothorax include: conservative medical treatment, thoracic duct embolization and surgical ligation of the thoracic duct. Thoracic duct embolization is a minimally invasive approach that should be considered by clinicians when chest tube output is high and medical treatment fails.

**A CASE OF COVID-19 ASSOCIATED MULTISYSTEM INFAMMATORY SYNDROME RESULTING IN NEW ONSET HEART FAILURE IN AN ADULT**

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10.1136/jim-2021-SRMC.38

**Case Report** COVID-19-related Multisystem Inflammatory Syndrome in Children (MIS-C) is a rare complication seen 2 to 6 weeks after the resolution of an acute COVID-19 infection. There is only one previously described case of COVID-19 associated hyperinflammatory syndrome in adults. Here we present a case of COVID-19 associated MIS causing myocarditis and new onset heart failure with reduced ejection fraction in an adult.

**Case** A 23 year-old man presented with fever, fatigue, exercise intolerance, myalgias, headaches, and a positive COVID-19 PCR test approximately 5 weeks earlier. On admission, the patient was noted to be febrile to 102.2°F, tachycardic, and hypotensive. Physical exam was notable for bilateral conjunctival irritation and trace lower extremity edema. Labs on admit were significant for creatine of 1.67 mg/dl, mild transaminisits, BNP 262 pg/ml, Troponin 0.67 ng/ml, and WBC 12.8 10^3/ul. Bedside echo performed in the Emergency Department was significant for a decreased LVEF 40–45%, global hypokinesis, and collapsible IVC. The patient was empirically treated with vancomycin and zosyn for possible sepsis however blood cultures remained clear and no source of infection was ever identified. Inflammatory markers were elevated with a LDH 252 U/L, D-Dimer 588 ng/ml, Ferritin 1,500 ng/ml, CPK 108 U/L, and CRP of 28 mg/dl. Angiogram of his chest showed no evidence of acute cardiopulmonary/airspaces disease and no pulmonary embolism. Troponins peaked at 1.64 ng/ml and CRP peaked at 37 mg/dl.

**Discussion** The patient continued to worsen with no obvious source of infection with a pattern of inflammatory markers consistent with MIS in the setting of recent COVID-19 infection. The severity of his presentation prompted treating the patient according to MIS-C guidelines developed for children which included IVIG, IV steroids, and high dose aspirin which resulted in a quick resolution of his fever and improvement in his cardiac function and end-organ labs and markers. The patient was discharged home on aspirin and pantoprazole. Follow up echocardiogram one month later demonstrated a return of normal cardiac function.

**Allergy, immunology, inflammation and rheumatology**

2:45 PM

Thursday, February 25, 2021

**39 SUBUNIT VACCINATION ELICITED LUNG TRM CELLS TO FACILITATE SEROTYPE INDEPENDENT IMMUNITY AGAINST K. PNEUMONIAE**

N Iwanaga *, J Kolls. Tulane University, New Orleans, LA

10.1136/jim-2021-SRMC.39

**Purpose of Study** The emergence of multidrug-resistant strains of Klebsiella pneumoniae (Kp) has become a global threat. Because cellular and humoral immunity are key components of protection against this pulmonary pathogen, we decided to develop a vaccine strategy that engages both types of immunological responses.

**Methods Used** Mice were first intratracheally vaccinated with Outer membrane protein X (OmpX) of Kp serotype 2, adjuvanted with heat-labile enterotoxin A1 domain (LTa1), and boosted 3 weeks after the initial immunization. Vaccinated C57Bl/6, B cell-deficient (mMT), and IL-17ra DermoCre mice – IL17ra is deleted in lung fibroblasts, were challenged with K1 strain. Lung T-cell responses were evaluated by FACS and ELISPOT. K1 strain-specific antibodies were measured by ELISA. RNA signature of CD4 T cells from vaccinated lungs was defined by single-cell RNA sequencing, and cellular features were examined by hematoxylin-eosin stain, immunofluorescence, and RNA scope.

**Summary of Results** Vaccination elicited robust local T cell immunity (Th1 and Th17), which conferred significant protection against pulmonary challenge with the heterologous K1 strain (log CFU, mock: 8.33 ± 7.837, vaccinated: 2.96 ± 1.682, p = 0.0001), and prevented the dissemination from the lung to the spleen (mock: 5.662 ± 5.333, vaccinated: 1.312 ± 1.002, p < 0.0001). Despite pulmonary protection in vaccinated µMT mice, bacteria still disseminated to the spleens (log CFU, lung: 3.716 ± 3.254, spleen: 5.311 ± 5.119). The efficacy was completely abrogated in the IL17ra DermoCre mice (lung: 7.929 ± 7.332, spleen: 5.487 ± 5.321). Vaccination triggered the formation of inducible bronchus-associated lymphoid tissue, however, it appeared less severe in IL-17ra DermoCre mice.

**Conclusions** IL-17R signaling in fibroblasts plays an important role in protective pulmonary immunity triggered by mucosal vaccination, while B cells and likely cross-reactive antibodies
are key to prevent bacterial dissemination. These data support mucosal vaccination’s therapeutic relevance with *K. pneumoniae*, which stimulates the simultaneous engagement of cellular and humoral immunity after pulmonary challenge with hyper-virulent *K. pneumoniae*.

**Purpose of Study** Rheumatoid Arthritis is an autoimmune arthritis involving degradation of cartilage, hyperplasia of the synovium, and infiltration of mononuclear cells. Collagen has been proposed as a potential suppressive agent for autoimmune arthritis because it can stimulate the Leukocytect-associated immunoglobulin-like receptor 1 (LAIR-1) which suppresses the activity of immune cells such as CD4+ Th1 cells. Post-translational modifications (PTM) are essential processes used by eukaryotic cells to diversify their protein functions and dynamically coordinate their signaling networks. Recently there has been a renaissance of interest in the possibility that citrullination (Cit) of proteins triggers more severe inflammation. The goal of this research was to use the collagen-induced arthritis animal model to test whether citrullination of Type I(I) collagen chains would alter its ability to suppress collagen induced arthritis (CIA).

**Methods Used** Groups of 10 DR1 mice were injected intraperitoneally with either: (1) Type I(I) collagen chains, (2) citrullinated Type I(I) collagen chains, or (3) phosphate-buffered saline (PBS). Each mouse was given four doses of 100μg each over the span of four weeks and the severity of arthritis were determined by visual examination. Each mouse was scored thrice weekly and the mean severity score was recorded at each time point.

**Summary of Results** We found that Type I(I) significantly reduced the severity of arthritis in the DR1 mice while mice treated with cit- Type I(I) developed more severe arthritis (severity scores of 0.5±1 vs 4.9 ± 6, p ≤ 0.04). The antibody responses to collagen were also studied to compare the outcomes following each treatment. Results demonstrated that mice treated with the non-cit Type I(I) collagen group had lower antibody levels to native Type II collagen compared to the citrullinated Type I(I) collagen group and PBS control group. These mice also had significantly lower antibody titers to cit type I collagen.

**Conclusions** This data suggests that type I collagen suppresses both the severity of arthritis and the antibody titers to collagen probably by stimulating LAIR-1 and that citrullination of the collagen interferes with this process.
kidney, and dorsum of neck skin were embedded for H&E, PAS, Masson’s staining for histopathological lupus lesions and quantified as skin score and kidney index. Germinal centers (GCs) and Tfh cells in spleen were identified by immunohistochemistry staining and flow cytometry.

**Summary of Results** Obesity was achieved with significant difference of mouse body weight between the RD and HFD groups from week 3 to week 14 (p<0.05 to p<0.01). Evidence of SLE development, such as skin rash in HFD group showed up as earlier as week 6 with higher probability (55.6% in HFD group vs 11.1% in RD group) (p<0.05). Proteinuria was increased from 11 to 14 week in HFD group. Increase trend of anti-dsDNA titer was detected in HFD group but no difference of ANA in these two groups. HFD mice had a higher histological score of skin (p<0.05) and higher kidney index than RD mice. The size of GCs and frequency of Tfh cells in the spleen were increased in HFD group.

**Conclusions** Our results show HFD-induced obesity exacerbates lupus development in MRL/lpr mice. Tfh cells may be involved in this process of SLE autoimmunity development. Interventions to reduce body weight or target Tfh cells may improve both lupus symptoms and outcomes in genetically predisposed SLE patients.

### Abstract 43 Table 1

<table>
<thead>
<tr>
<th>Antigen positivity</th>
<th>Any positive aPL (+20 G/L/MPL)</th>
<th>n</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nephritis</td>
<td>56.94%</td>
<td>140</td>
<td>0.02</td>
</tr>
<tr>
<td>Discoid Rash</td>
<td>27.38%</td>
<td>120</td>
<td>0.03</td>
</tr>
<tr>
<td>Rheumatoid Arthritis</td>
<td>71.88%</td>
<td>128</td>
<td>0.08</td>
</tr>
<tr>
<td>Sclerosis</td>
<td>38.10%</td>
<td>120</td>
<td>0.13</td>
</tr>
<tr>
<td>Neurologic Disorder</td>
<td>39.53%</td>
<td>120</td>
<td>0.05</td>
</tr>
<tr>
<td>Leukopenia</td>
<td>68.97%</td>
<td>58</td>
<td>0.32</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
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<td>55</td>
<td>0.35</td>
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**Antibody positivity**

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<th>High positive aPL (+40 G/L/MPL)</th>
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<th>p value</th>
</tr>
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<tbody>
<tr>
<td>Nephritis</td>
<td>54.21%</td>
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<td>Discoid Rash</td>
<td>24.04%</td>
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<td>Rheumatoid Arthritis</td>
<td>72.16%</td>
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</tr>
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<td>Sclerosis</td>
<td>99.58%</td>
<td>0.09</td>
</tr>
<tr>
<td>Neurologic Disorder</td>
<td>99.58%</td>
<td>0.00</td>
</tr>
<tr>
<td>Leukopenia</td>
<td>71.43%</td>
<td>0.09</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>64.68%</td>
<td>0.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low positive aPL (+10 G/L/MPL)</th>
<th>n</th>
<th>p value</th>
</tr>
</thead>
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<td>Nephritis</td>
<td>107</td>
<td>0.24</td>
</tr>
<tr>
<td>Discoid Rash</td>
<td>104</td>
<td>0.24</td>
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<tr>
<td>Rheumatoid Arthritis</td>
<td>97</td>
<td>0.09</td>
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<tr>
<td>Sclerosis</td>
<td>96</td>
<td>0.09</td>
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<td>Neurologic Disorder</td>
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<td>49</td>
<td>0.09</td>
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<tr>
<td>Thrombocytopenia</td>
<td>47</td>
<td>0.15</td>
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</tbody>
</table>

**Abstract 43**

**LUPUS NEPHRITIS, OTHER CLINICAL FEATURES AND THEIR ASSOCIATION WITH ANTIPHOSPHOLIPID ANTIBODY POSITIVITY IN PATIENTS WITH LUPUS**

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10.1136/jim-2021-SRMC.43

**Purpose of Study** Antiphospholipid antibody positivity (aPL) is associated with elevated thrombosis among patients with systemic lupus erythematosus (SLE). The goal of our study was to determine whether aPL seropositivity correlates with lupus nephritis (LN) and other clinical features among patients with SLE.

**Methods Used** We used data from a longitudinal registry of SLE patients seen at our institution from 2003-2020. Patients with SLE were selected using a case-control design based on having known aPL and/or lupus anticoagulant (LAC). aPL included IgM and IgG anticardiolipin and anti-b2glycoprotein. Demographic information, American College of Rheumatology (ACR) classification criteria, and renal biopsies were evaluated. Statistical analysis was performed using Pearson’s chi-squared testing for categorical measures.

**Summary of Results** 399 patients with SLE were evaluated. 49.3% had history of LN. Majority of patients were African American (AA) (72.1%). AA patients with SLE were more likely to develop LN compared to non-AA (59.3%, 26.4%, p<0.01), consistent with known health disparities previously described. Patients with childhood-onset SLE were significantly more likely to develop LN compared to those diagnosed in adulthood (67.1, 45.8, p<0.01). LN patients were more likely to be aPL positive compared to those without nephritis (56.9%, 45.10%, p=0.02). Furthermore, patients were significantly (p<0.05) more likely to have neurological disorder (seizures/psychosis) with any aPL or LAC positivity, discoid rash with any positive aPL, and thrombocytopenia with positive LAC (table 1).

**Conclusions** Within a predominately AA population of patients with SLE, elevated levels of aPL are associated with LN, in addition to discoid rashes and seizures/psychosis. LAC, but not aPL positivity alone, was associated with thrombocytopenia. AA and childhood-onset SLE patients were more likely to develop LN. Future studies will explore a molecular basis for these associations and the impact on aPL treatment strategies.

### Abstract 44

**ANTI-PSEUDOMONAS ANTIBODY POSITIVITY IN PATIENTS WITH LUPUS AND ITS ASSOCIATION WITH ANTIPHOSPHOLIPID ANTIBODY POSITIVITY IN PATIENTS WITH LUPUS**

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10.1136/jim-2021-SRMC.44

**Purpose of Study** Cystic fibrosis (CF) is an inherited lethal disease caused by mutations in CFTR (cystic fibrosis transmembrane conductance regulator). Approximately, 60% of patients with CF are homozygous for the F508del mutation. Although nearly 100% of these patients have pancreatic insufficiency but in contrast lung function is quite variable suggesting modifier genes may play a role in lung disease. To this end a gene modifier study showed that class II MHC alleles are associated with the age of first detectable Pseudomonas aeruginosa (PA) infection and lung function. Thus, we thought to assess if serological responses to PA varied among CF subjects with normal lung function versus reduced lung function.

**Methods Used** We screened anti-mucoid PA antibodies in patients’ sera by ELISA and confirmed their PA-specific surface binding by FACS. Immunoprecipitation-proteomics were performed using outer membrane protein and human serum to identify the potential antigen. Mice were immunized by either purified OprI, extracted outer membrane proteins or whole PA three times subcutaneously and challenged with 10^7 of alive PA one week after last immunization intratracheally. All mice were sacrificed at 24hr or 72hr post-challenge, daily

**Abstracts**
weight loss was monitored, serum had been collected to examine anti-PA antibodies while lung tissue used for histology and immunohistochemistry.

**Summary of Results** High titers of anti-mucoid PA antibodies as well as antibodies directly against OprI were found in chronically PA infected patients, even higher in patients with worse lung function than the ones with better lung function. Therefore, we hypothesized that anti-PA antibody may contribute to tissue damage by immunocomplex deposition in the lung, instead of preventing infection. Results showed immunized mice displayed more severe inflammation and more weight loss than unimmunized controls, along with a higher titer of anti-OprI or anti-PA antibodies. Furthermore, no weight loss was observed in immunized Rag2KO mice, which lack B cells and T cells, suggesting a role of adaptive immunity in the pathology.

**Conclusions** These data suggest that one mechanism by which class II MHC is a modifier gene in CF is through antigen presentation and determining the types of anti-PA antibodies are generated in CF.

### Infectious diseases

**2:45 PM**

**Thursday, February 25, 2021**

#### VARIATION IN HOSPITALIST-SPECIFIC ANTIBIOTIC PRESCRIBING AT 4 HOSPITALS: A NOVEL TOOL FOR ANTIBIOTIC STEWARDSHIP

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10.1136/jim-2021-SRMC.45

**Purpose of Study** Describe antibiotic (abx) prescribing variation among hospitalists within a healthcare system.

**Methods Used** A novel hospitalist-specific abx prescribing metric was developed by linking billing data to abx administration records in 4 hospitals (2 academic (AMC1, AMC2) and 2 community (CH1, CH2) from 1/2016-12/2018. Dates hospitalist billed for a patient = billed patient-days (bPD); each abx day of therapy (DOT) mapped to a bPD. Each DOT classified to 4 abx categories: broad-spectrum hospital-onset (BS-HO), broad-spectrum community-onset (BS-CO), anti-MRSA, and highest risk for C. difficile infection (CDI). DOT and bPD pooled to calculate hospitalist-specific DOT/1000 bPD. Best subsets regression performed to assess model fit and generate hospital and abx category-specific models adjusting for patient-level factors (e.g. comorbidities). Models used to calculate predicted hospitalist-specific DOT and observed:expected (O:E) ratios for each abx category. Kruskal-Wallis tests and pairwise Wilcoxon ranked-sum tests used to determine differences between median DOT/1000 bPD and O:E between hospitals for each abx category.

**Summary of Results** 116 hospitalists from 4 hospitals contributed 437,303 bPD. Median DOT/1000 bPD varied between hospitals (BS-HO: 46.7–84.2; BS-CO: 63.3–100; anti-MRSA: 48.4–65.4; CDI: 82.0–129.4). CH2 had significantly higher median DOT/1000 bPD compared to AMC 1/AMC 2 (all abx categories p < 0.001) and CH1 (BS-HO: p=0.01; Anti-MRSA: p=0.02). 4 abx groups at 4 hospitals produced 16 models: model fit good for CH2 (R2 > 0.53 for all models), modest for AMC2 (R20.46–0.55), fair for CH1 (R20.19–0.35), and poor for AMC1 (R2 < 0.12 for all models). Variation in hospitalist-specific O:E was moderate (IQR 0.9–1.1) though AMC1 showed greater variation with no significant differences in median O:E between hospitals (all abx categories p > 0.1).

**Conclusions** Adjusting for patient-level factors reduced much of the variation in hospitalist-specific DOT/1000 bPD in some but not all hospitals, suggesting that factors besides comorbidities may drive prescribing. This hospitalist-specific abx prescribing metric may represent a target for stewardship intervention (e.g. hospitalist-specific feedback of prescribing).

#### MANAGEMENT AND OUTCOMES OF NUCLEIC ACID AMPLIFICATION TEST POSITIVE/TOXIN NEGATIVE CLOSTRIDIODES DIFFICILE PATIENTS IN A SINGLE CENTER

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10.1136/jim-2021-SRMC.46

**Purpose of Study** To follow the treatment regimens and clinical outcomes of NAAT positive toxin EIA negative patients.

**Methods Used** In a single center from October 2018 to June 2019, we instituted a nursing protocol for C. diff testing. If the patient had ≥3 soft, loose, or liquid stools in 24 hours within the first 3 days of admission, nursing was to place them on contact precautions submit a non-formed stool sample. Strict criteria for stool sample submission were implemented from hospital day 4 onward. Samples initially underwent NAAT with positive NAAT results prompting further testing with a toxin A and B EIA. NAAT positive/toxin negative patients were then followed further and data on their management and outcomes were obtained. Management data included the initiation of isolation, initiation of treatment, antibiotic used, and duration of treatment. Clinical outcome data included recurrence of C. diff infection, 30-day readmissions, and readmissions directly related to C. diff.

**Summary of Results** A total of 163 NAAT positive toxin EIA negative patients were identified. 153 patients (96.3%) received isolation orders and 122 patients (74.8%) received treatment. Regimens varied widely with either oral Vancomycin, Metronidazole, or Fidaxomicin as did duration of treatment. Of those untreated, 8 (4.9% of total, 19.5% of treated) developed recurrent C. diff, 23 (14.1% of total, 18.9% of treated) were re-admitted within 30 days, and 8 (4.9% of total, 6.6% of treated) were due to C. diff infection. Of those untreated, 8 (4.9% of total, 19.5% of untreated) had recurrent C. diff, 10 (6.1% of total, 24.4% of untreated) were re-admitted, and 2 (1.2% of total, 4.9% of untreated) were due to C. diff infection.

**Conclusions** The majority of NAAT positive/toxin negative patients received treatment with greatly varying regimens and durations. Despite treatment of this population, there was no significant difference in rates of recurrence, 30-day readmission, and readmissions due to C. diff. Our data suggests overtreatment of NAAT positive/toxin negative patients.
COVID-19 IN KIDNEY TRANSPLANT RECIPIENTS: EXPERIENCE FROM A LARGE HEALTH SYSTEM IN LOUISIANA

1A Torres-Ortiz*, 1J Walker, 1J Velez, 1J Garcia. 1Ochsner Medical Center – New Orleans, New Orleans, LA; 2The University of Queensland Faculty of Medicine, Herston, Australia

10.1136/jim-2021-SRMC.47

Purpose of Study The purpose of this study is to share the experience in our center and generate medical evidence on the effect of immunsuppression in the outcomes of kidney transplant recipients with Coronavirus Disease-19 (COVID-19).

Methods Used We conducted a retrospective study in kidney transplant recipients from a single health system that were diagnosed with COVID-19 based on a positive real-time reverse transcription polymerase chain reaction test for SARS-CoV-2 RNA between 03/01/2020 and 04/30/2020. We compared them with affected patients without a kidney transplant and without any kind of immunosuppressive medication (control). We examined the rates of hospitalization, intensive-care unit (ICU) admission, acute kidney injury (AKI) and mortality as outcome measures.

Summary of Results A total of 8473 patients were diagnosed with COVID-19 within our Health System within the study period. Thirty-three (0.4%) were kidney transplant recipients. Sixteen of the 33 (48%) were admitted to the hospital (median age of 56, 68% males, 93% African American) vs 2201 admissions (25%) for the control group (median age 66, 48% males, 65% African-American), i.e., a significantly greater risk for hospitalization for transplant recipients (p = 0.002). Percentage of patients with hypertension in the transplant group was numerically higher (93% vs 80%, p = 0.06), as well as the number of ICU admissions (43% vs 28%, p = 0.055). AKI was more common in transplant patients (81% vs 33.8% p<0.0001). No difference in mortality was observed (31 vs 24%, p = 0.34). Among transplant patients, those hospitalized were more likely to be on prednisone (73% vs 35%, p = 0.025) and had a post-transplant graft life of 7.9 years compared to 5.5 years for those not hospitalized (p=0.08).

Conclusions Kidney transplant recipients affected with COVID-19 exhibited a greater incidence of hospitalization, AKI and a trend for more ICU admissions. Use of immunosuppression with prednisone was associated with greater risk for hospitalization.

CORD BLOOD FOR THE ASSESSMENT OF EARLY ONSET SEPSIS IN PRETERM NEWBORNS

SM Lerna Narvaez*. University of Texas Medical Branch, Cypress, TX

10.1136/jim-2021-SRMC.49

Purpose of Study In Preterm infants, Early-Onset sepsis is a major cause of morbidity and mortality. Routinely, blood is drawn for blood culture, CBC, and blood group cross-match which may be ≥10 mL/kg. In an era of quality improvement, the emphasis is placed on better utilization of medical care resources like umbilical cord blood. In preterm infants, umbilical cord blood can be used for lab tests at admission thereby avoiding significant blood loss in the first hour (the golden hour). The objective of the study is to investigate if Umbilical Cord Blood can be safely used to measure the biomarkers of Early Onset Sepsis in Preterm infants.

Methods Used After Institutional Review Board approval, under sterile conditions, we collected umbilical blood samples for blood culture, complete blood counts, and biomarkers of sepsis (Presepsin, Procalcitonin, and C-Reactive Protein) from Preterm Infants. We used ELISA to measure biomarkers of sepsis.

Summary of Results We included 64 Preterm infants with mean gestation 32.15 ±2.2 weeks, birth weight 1853 ± 519 grams. There were 37 (58%) male infants, 69% mothers received prenatal steroids for lung maturity, 39% mother received antenatal antibiotics, 5% mothers had chorioamnionitis, 16% had premature prolonged rupture of membranes, 82% delivered by cesarean section. Cord blood presepsin levels 4.65 ± 1.7 ng/mL (normal range 0.4 – 3.98 ng/mL and cut off for sepsis >92 ng/mL), C-Reactive Protein 0.04 ±
of 157 patients presenting with extremity fractures there were no reports of diarrhea. We further analyzed febrile versus afebrile urinary tract infections. The incidence of diarrhea between febrile culture proven urinary tract infections and all children with culture proven urinary tract infections was similar and not statistically different.

**Conclusions** There appears to be an association between urinary tract infections and extra-intestinal or parenteral diarrhea. Diarrhea occurred in 18.6% of a large case series of children with culture proven urinary tract infections and in 0.9% and 0% of patients presenting to the ED for closed head injuries and extremity fractures.

### Endocrinology and metabolism

9:00 AM

**Friday, February 26, 2021**

**51 MUSCLE MITOCHONDRIAL FUNCTION ANALYSIS IN ADULTS WITH TYPE 1 DIABETES**

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**Purpose of Study** People with type 1 diabetes (T1D) develop excess cardiovascular disease (CVD), a predictor of premature mortality. CVD in T1D relates to impaired insulin sensitivity, vascular function and possibly mitochondrial function. We sought to compare *in vivo* and *ex vivo* measures of mitochondrial function in adults with and without T1D to better understand contributions of vascular substrate delivery versus mitochondrial structural defects.

**Methods Used** Adults with and without T1D matched for age and sex were enrolled. Post-exercise mitochondrial function was assessed *in vivo* using 31phosphorous magnetic resonance spectroscopy. *Ex vivo* function in muscle biopsy samples was measured via mitochondrial oxygen consumption with lipid and carbohydrate substrates in permeabilized muscle fibers using Oroboros Oxygraph O2K Respirometry. Hyperinsulinemic euglycemic clamps were performed to determine insulin sensitivity. Groups were compared with Student’s t-tests.

**Abstract 51 Table 1**

<table>
<thead>
<tr>
<th>Control (n=51)</th>
<th>T1D (n=21)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>In vivo Qmax (mmol/sec)</td>
<td>0.53 ± 0.18</td>
<td>0.41 ± 0.15</td>
</tr>
<tr>
<td>In vivo Anaerobic Glycolysis (mmol/L/sec)</td>
<td>0.20 ± 0.12</td>
<td>0.48 ± 0.41</td>
</tr>
<tr>
<td>In vivo Mitochondrial Efficiency</td>
<td>0.20 (0.12, 0.21)</td>
<td>0.12 (0.08, 0.15)</td>
</tr>
<tr>
<td>Ex vivo Carbohydrate state 3 - Coupled (pmol O2/sec/mg)</td>
<td>46 (37, 54)</td>
<td>36 (26, 42)</td>
</tr>
<tr>
<td>Ex vivo Carbohydrate state - Uncoupled</td>
<td>78 ± 23</td>
<td>70 ± 21</td>
</tr>
<tr>
<td>Ex vivo Lipid state 3 - Coupled (pmol O2/ sec/mg)</td>
<td>51 (38, 61)</td>
<td>38 (31, 45)</td>
</tr>
<tr>
<td>Ex vivo Lipid state - Uncoupled (pmol O2/ sec/mg)</td>
<td>74 ± 20</td>
<td>67 ± 20</td>
</tr>
</tbody>
</table>
Summary of Results Seventy-two participants were enrolled (with T1D: n=51, age 40±14 years, BMI 27.1±3.2 kg/m² and without T1D: n=21, age 45±11 years, BMI 30.5±5.5 kg/m²) (table 1). Insulin sensitivity was lower (p≤0.0001) in T1D, as were in vivo maximum mitochondrial capacity (Qmax) and mitochondrial efficiency (ME). In vitro rates of anaerobic glycolysis were higher in T1D. Ex vivo analysis demonstrated decreased coupled oxygen consumption with both carbohydrate and lipid substrates in T1D.

Conclusions The data suggest that during exercise, adults with T1D preferentially utilize anaerobic glycolysis while having reduced mitochondrial capacity. Ex vivo differences suggest intrinsic impairment of mitochondrial oxygen utilization during carbohydrate and lipid metabolism independent of vascular oxygen or substrate supply. Understanding why these changes occur may lead to the development of new therapies to prevent CVD in T1D.

52 ESTROGEN SUPPLEMENTATION IS ASSOCIATED WITH HIGHER QUALITY OF LIFE SCORES IN WOMEN WITH CYSTIC FIBROSIS

M Wu*, N Aroa, V Sueblinong, WR Hunt, V Tangpricha. Emory University School of Medicine, Atlanta, GA; 2Children’s Healthcare of Atlanta, Atlanta, GA; 3Emory University Emory College of Arts and Sciences, Atlanta, GA

Purpose of Study With rapid advancements in therapeutic options for patients with cystic fibrosis (CF), the median predicted survival has increased to 47 years along with the prevalence of non-pulmonary complications for patients with CF. Women with CF suffer irregular menses, sexual dysfunction and low bone mineral density. With increasing pregnancies among women with CF, they may consider contraception. Estrogen supplementation may modulate these outcomes and others. The purpose of this study was to explore the effects of supplemental estrogen use on quality of life (QOL) in CF.

Methods Used Women with CF ages 16–50 years were administered a validated CF-specific QOL survey (CFQ-R) during a clinic visit through an IRB-approved cross-sectional study. The QOL domain scores of subjects taking and not taking estrogen were compared pairwise by Kruskal Wallis tests and overall by Wilcoxon signed rank test.

Summary of Results Estrogen supplementation was associated with higher QOL scores in CF than the estrogen unexposed subjects (p=0.001). The estrogen exposed subjects had significantly higher scores in 7 of the 12 CFQ-R categories: physical, vitality, treatment burden and role domains and weight, respiratory and digestion symptom scales (p<0.05).

Conclusions Estrogen supplementation was associated with improved quality of life in women with CF. This cross-sectional study highlights the need for further investigation into the potential benefits of estrogen supplementation. The dose, route, formulation and timing of estrogen therapy may impact the beneficial effects for women with CF.

53 SODIUM-GLUCOSE COTRANSPORTER 2 INHIBITION ATTENUATES THE INTRARENAL RENIN-ANGIOTENSIN SYSTEM IN A RAT MODEL OF POLYCYSTIC OVARY SYNDROME

J Pruett*, S Everman, ED Torres Fernandez, D Romero, Yanes Cardozo. University of Mississippi Medical Center, Jackson, MS; 2The University of Texas at Austin, Dell Medical School, Austin, TX; 3Women’s Health Research Center, Jackson, MS

Purpose of Study Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in women of reproductive age. PCOS is characterized by hyperandrogenemia andovulatory dysfunction, and it is highly co-prevalent with severcardiovascular risk factors such as obesity, increased blood pressure (BP), and insulin resistance (IR). The renin-angiotensin system (RAS) appears to be dysregulated in PCOS as well. Current treatments for these cardiovascular risk factors in PCOS are lackluster. We tested the hypothesis that administration of a sodium-glucose cotransporter 2 inhibitor (SGLT2i) will attenuate the RAS in a PCOS rat model.

Methods Used Four-week old Sprague Dawley female rats were randomized to either control or dihydrotestosterone (7.5 mg/90 days) at 12 weeks old (wo), rats were divided to receive drinking water or the SGLT2i empagliflozin (10 mg/kg/day) for 3 weeks (n=7–10 per group). Adiposity was analyzed by EchoMRI. Renal cortices and medullas were collected for real time PCR for intrarenal RAS components. Angiotensin-converting enzyme (ACE) activity was measured fluorometrically. BP was measured by radiotelemetry during SGLT2i treatment.

Summary of Results PCOS rats have increased adiposity, leptin, IR, renal ACE mRNA expression, and BP. SGLT2i decreased fat mass (21.1 ± 2.7 vs 12.2 ± 0.8 g, P<0.01) and leptin (0.86 ± 0.16 vs 0.45 ± 0.05 ng/mL, P<0.05) in PCOS. SGLT2i decreased BP in PCOS. In the renal medulla of PCOS, SGLT2i decreased mRNA expression of ACE and angiotensin II type 1 receptor. Furthermore, in PCOS, SGLT2i decreased medullary ACE activity (5573.0 ± 563.4 vs 3707.1 ± 430.2 nmol/min/mg, P<0.01). However, plasma ACE and IR were unchanged by SGLT2i in PCOS.

Conclusions SGLT2i decreases activation of the intrarenal RAS in PCOS, which was associated with decreased adiposity, leptin, and BP. This suggests that SGLT2i, through attenuation of the intrarenal RAS, could be a novel therapeutic agent for reducing BP and obesity in women with PCOS. Funded by COBRE/MS CEPR P20GM121334.
ALTERATIONS IN THE MOLECULAR PATHWAYS INVOLVED IN THE EXPRESSION OF HYALURONAN IN HUMAN PANCREATIC ISLETS

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10.1136/jim-2021-SRMC.54

Purpose of Study Type 1 Diabetes (T1D) affects many individuals and is an autoimmune disorder that involves the destruction of β pancreatic islet cells. In islets that experience inflammatory responses, hyaluronan, hyaluronic acid (HA), has been found to accumulate in the extracellular matrix (ECM). However, the relationship between HA and T1D is not fully understood. Low molecular weight HA (LMW-HA) has been associated with the inflammatory pathways involved in the progression of T1D.

Methods Used To better determine the role HA plays in the progression of islet inflammation (insulitis), we analyze prior data from 260 pancreatic islet samples. The samples are obtained from the Network for Pancreatic Organ Donors (NPQD). Samples are grouped by disease state: Control, AB+ (prediabetes), T1D. The samples are then stained to produce four groups of islets: Ins+CD3-(normal), Ins+CD3+(insulitis), Ins-CD3+, and Ins-CD3-. Pancreatic islets are isolated through laser capture microdissection. RNA transcriptomes are collected and analyzed by unpaired, uneven t-tests. Literature review and data mining with WebGestalt into genontology and KEGG pathways are performed to identify genes of interest.

Summary of Results Genes involved in pathways involving HA are found to be differentially expressed in islets with insulitis and those without. The genes found are associated with CD44 cascade signaling, leukocyte recruitment, apoptosis, ECM degradation, angiogenesis, and β cell function and differentiation. HYAL2 is increased in islets that are AB+ which suggests that LMW-HA may be abundant in islets prior to insulitis, and the LMW-HA binding with receptors such as CD44 may cause cascade events which promotes leukocyte recruitment and infiltration.

Conclusions Better understanding of the relationship between HA and T1D inflammatory pathways may provide biomarkers to provide better predictive indicators in the progression and management of T1D, and our data provides the opportunity to further explore the mechanisms involved in T1D and HA.

MICRONRNA-21 OVEREXPRESSION AMELIORATES CARDIOMETABOLIC OUTCOMES IN A MOUSE MODEL OF POLYCYSTIC OVARY SYNDROME

M Cummins*, A Huffman, S Reza, J Basnet, M Syed, J Rekelhoff, L Yanes Cardozo, D Romero. University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2021-SRMC.55

Purpose of Study Polycystic Ovarian Syndrome (PCOS), the most common endocrine disorder in reproductive age women, is characterized by androgen excess, ovulatory dysfunction, and polycystic ovaries. PCOS is associated with a number of cardiometabolic dysregulations. MicroRNA-21 expression is dynamically regulated in tissues involved in PCOS pathophysiology. Adipose expansion via hyperplastic as opposed to hypertrophic growth has been associated with improved cardiometabolic outcomes. We aim to determine the role of microRNA-21 overexpression on cardiometabolic outcomes in a mouse model of PCOS by comparison of frequency distributions of adipocyte size in three key fat depots.

Methods Used Three-week old microRNA-21 overexpression (miR21OE) or wild-type (WT) C57BL/6 female mice were implanted s.c. with silastic tubes containing the androgen dihydrotestosterone (DHT) or placebo for 90 days. Body weights were taken weekly. Body composition was determined by Echo-MRI. Adipocyte size was determined in H&E stained adipose tissue (mesenteric, retroperitoneal, and subcutaneous fat depots) sections using ImageJ software with the Adiposoft plugin. Two-way ANOVA and Kolmogorov-Smirnov statistical analyses were performed using GraphPad Prism.

Summary of Results DHT significantly increased body weight in both WT and miR21OE mice compared to their controls. There was a significant increase in the fat/lean mass ratio in DHT-treated WT mice but not in DHT-treated miR21OE mice. DHT decreased the frequency of small adipocytes and increased the frequency of large adipocytes in all three fat depots analyzed. MiR21OE mice showed an attenuation in the increase of large adipocyte and in the increase of large adipocyte frequencies in all three fat depots in DHT-treated mice.

Conclusions MiR21OE mice had an ameliorated response to deleterious cardiometabolic outcomes associated with elevated androgens. The pronounced change in hyperplastic adipose expansion in fat depots of DHT-treated miR21OE animals indicates the potential mechanism by which these animals may have increased protection. MicroRNA-21 supplementation could be a novel therapeutic approach for PCOS cardiometabolic dysregulations.

A NOVEL DIABETES SCREENING: AUDIO CLASSIFICATION USING DEEP LEARNING (PILOT STUDY)

1P Suppakitjanusant*, 1Z H Aung, 1B Ongphiphadhanakul, 1V Tangpricha. 1Mahidol University Faculty of Medicine Ramathibodi Hospital, Bangkok, Thailand; 2Emory University School of Medicine, Atlanta, GA; 3Mahidol University Faculty of Engineering, Nakhon Pathom, Thailand

10.1136/jim-2021-SRMC.56

Purpose of Study Artificial intelligence will play an important role in the future in the medical field, especially in medical diagnosis. The potential of employing deep learning for audio-based detection by voice recordings in early diagnosis of Alzheimer’s disease, Parkinson’s disease, and depression are being explored. Inspired by these promising results, we aim to develop a non-invasive audio-based diabetes voice screening system that utilizes deep learning. We hypothesized that high blood glucose levels would cause laryngeal soft tissue swelling, leading to changes in certain voice characteristics.

Methods Used A prospective case-control study was performed in subjects recruited from the Endocrinology Clinic at Emory Healthcare from January to March 2020. We extracted voice spectrograms via the mel-frequency cepstral coefficient from 5-second samples of a sustained/a/vowel. Moreover, we designed a convolutional neural network (CNN) architecture together with the K-Nearest Neighbour algorithm to classify voice samples into two classes representing the presence or absence of diabetes.

Summary of Results There were a total of 24 subjects consisting of 17 people with diabetes and 7 people without diabetes
in this study. The races of participants were African American 58.33%, Caucasian 33.33%, and others 8.33%. The mean age of the participants with diabetes was significantly older than healthy participants (55.00 ± 8.86 years vs 28.60 ± 7.00 years, p-value <0.001). Participants with diabetes had an average duration of diabetes for 9.00 ± 8.97 years. Overall, performances of diabetes classification are 83.34% sensitivity, 50% specificity, and 67 ± 17% accuracy with a low random chance (Cohen’s kappa coefficient 0.33).

Conclusions The proposed CNN algorithm has high performance to differentiate voice samples from people with and without diabetes. Based on this pilot study, a deep learning-based voice analysis holds promise in identifying patients who may have undiagnosed diabetes.

Hematology and oncology
9:00AM
Friday, February 26, 2021

57 EFFECTS OF EXTRACELLULAR MICRORNA ON THE TUMORIGENESIS OF COLORECTAL CANCER USING ORTHOTOPIC XENOGRAFT MOUSE MODEL
1J Simon*, 1L McKean Baste, 1S Baker, 1A Klinger, 1G Maresch, 1L Hellmers, 1A Bhattarai, 1X Zhang, 2C Salomon, 2D Margolin, 1U Paruch, 1L Li, 1Ochsner Health System, New Orleans, LA; 2The University of Queensland Faculty of Humanities and Social Sciences, Saint Lucia, Australia
10.1136/jim-2021-SRMC.57

Purpose of Study MicroRNAs (miRNAs) are short non-coding RNAs implicated in post-transcriptional regulation of gene expression. Abnormal expression of miRNAs in cancer is associated with enhanced tumorigenesis/metastases. Our previous data showed that lymph node stromal cells (LNSC) secreted extracellular vesicles (EV) may enhance tumorigenesis via miRNAs. Here we show the effect of EV miRNAs in colorectal cancer (CRC) progression using gain- and loss-of-function approaches in orthotopic mouse models.

Methods Used Total miRNA sequencing was analyzed using in silico computer prediction model (DIANA-miRPATH v2.0). Four overexpressed miRNAs in LNSC EV were selected (miR-155-5p, miR-199a-3p, miR-143-3p, and miR-214-3p). Tumor cell proliferation assay was done using CRC SW620 cell line transfected with selected miRNA mimics or inhibitors. In vitro, luciferase tagged SW620 cells transfected with selected miRNA mimics, inhibitors, or controls were injected into the rectal submucosa of NOD/SCID mice. Tumor growth and metastases were observed by weekly bioluminescent imaging (BLI). At week 7, tumors were weighed and the BLIs of the tumors were analyzed with FACS. Blood, spleens, and peritoneal washes were collected. Cells were analyzed with FACS.

Summary of Results The mimics of all four miRNAs significantly increased SW620 cell proliferation (p<0.01 to p<0.001). The inhibitor of miR-199a-3p suppressed SW620 cell proliferation (p<0.05). In our orthotopic mouse model, compared with controls, groups with SW620 cells transfected with mimics of miR-199a-3p and miR-143-3p had higher frequencies of tumorigenesis (94% and 66.6% vs. 14%), liver/lung metastases, and tumor BLI. Mice with miRNA-199a-3p inhibitor transfected SW620 cells showed a trend of lower BLI and tumor growth than controls.

Conclusions Our gain- and loss-of-function studies show that miRNAs carried in LNSC-EV are crucial for CRC tumorigenesis. Elaborating their role will provide new insight into the interplay between LNSCs and CRC cells. These miRNAs may serve as potential therapeutic targets for CRC patients.
Conclusions Our aAPC mediate robust expansion of normal human donor CD8+ cells. The cells were only found in the peritoneal washes which is insufficient for successful grafting. Growth optimization and further characterization is needed to successfully emulace the cancer patient in our mice.

59 THE GENE EXPRESSION PROFILE OF TRIPLE-NEGATIVE BREAST CANCER AFTER NEOADJUVANT CHEMOTHERAPY

1A Philippovskiy*, 1S Gaur, 2K Chambers, 2R Gamez, 1R McCallum, 2R Kittner, 2R Aguilara, 3S Ray. Texas Tech University Health Science Center, El Paso, TX; 2Texas Tech University Health Sciences Center El Paso, El Paso, TX; 3University of Texas El Paso, El Paso, TX

Purpose of Study Triple-negative breast cancer (TNBC) is a heterogeneous subtype of breast cancer characterized by the absence of any targetable receptors. Over decades chemotherapy remains the only medical option. Historically, neoadjuvant chemotherapy (NACT) has been used to downstage unresectable breast cancer to allow better locoregional control. Currently, the best predictive marker for the disease recurrence is pathological complete response (pCR) after the NACT. However, the response rate to chemotherapy is only 40%, and there is no marker to predict resistance of tumors to chemotherapy.

To better understand which patients will achieve pCR, we analyzed the gene expression profile of 15 patients with TNBC before and after NACT.

Methods Used We analyzed formalin-fixed tumor samples from fifteen women diagnosed with stage (I-III) TNBC between 2014–2019. We have compared the gene expression profile of patients before and after NACT. We have compared gene expression profiles between patients who achieved pCR with patients with RD. Genomic DNA was extracted, enriched, and sequenced from all exomes on the Illumina HiSeq. Genomic analysis of TNBC samples identified 12682 genes commonly expressed after NACT in a group of patients with RD. In the same group, 446 genes were upregulated significantly after NACT, and 275 were significantly downregulated. Among commonly upregulated genes related to cancer, we identified GLI1, DUSP1, EGR1/3, ATP2, c-JUN. The commonly upregulated pathways after NACT were pathways encoding extracellular matrix-remodeling, DNA-damage response pathway, and pathways related to resistance to chemotherapy.

Conclusions Our data suggest that gene expression profiling can be used to identify patients with chemoresistant type of TNBC. This can potentially help medical oncologists to avoid excessive toxicity from NACT and consider surgical options first.

60 HIGH FALSE NEGATIVE RATE AND HIGH MORTALITY: COVID-19 INFECTION IN PATIENTS WITH HEMATOLOGICAL MALIGNANCIES

A Niu*, B Ning, T Hu, NS Saba. Tulane University School of Medicine, New Orleans, LA

Purpose of Study Patients with hematological malignancies (HM) are immunocompromised and considered high-risk for COVID-19. Their immune response to COVID-19 may differ from that of immunocompetent hosts. The aim of this study was to evaluate COVID-19 detection in patients with HM and their overall clinical course.

Methods Used This observational study examined patients with a variety of HM with high suspicion for COVID-19. All were tested with guideline-directed nasopharyngeal RT-PCR. For a subset of patients who tested negative, clustered regularly interspaced short palindromic repeats (CRISPR) technology was used for COVID-19 detection. The false negative rate and overall mortality of all patients was examined.

Summary of Results We examined 29 patients (age 24–82) from 3/31/20 to 7/17/20 with a variety of HM for COVID-19. 16 patients tested positive for COVID-19 with nasopharyngeal RT-PCR testing, while 13 patients tested negative. We then used CRISPR technology to test 8 patients who initially tested negative by RT-PCR. Surprisingly, 7 of the 8 patients tested positive for COVID-19 with either a blood sample and/or nasal swab for the SARS-CoV-2 specific N gene and ORF1ab gene. Excluding patients who were negative by RT-PCR and not tested by CRISPR, the rate of false negativity with RT-PCR testing was 29%. A fatality of 31% was noted. Of the 23 positive patients, 8 patients received COVID-19-directed therapy while 4 patients expired. Of the 8 treated patients, 7 improved while 1 patient expired.

Conclusions 29 patients with a variety of HM (20 lymphoid, 9 myeloid) were examined for COVID-19. 10 patients had undergone stem cell transplantation (SCT), 15 were on chemotherapy (notably lymphodepleting chemotherapy), and 4 were on surveillance. As COVID-19 is associated with worsening lymphopenia, our patients’ symptoms and immune response to COVID-19 likely differed from immunocompetent hosts. This translated into an overall worse outcome as seen by the high mortality rate. Therefore, it is imperative to establish COVID-19 diagnosis quickly, as faster initiation of treatment has been associated with better outcomes. However, due to a strikingly high false negative rate, high clinical suspicion must guide further workup and therapy in patients with HM who present with an undiagnosed respiratory illness consistent with COVID-19.
Identification and Characterization of Desmoplastic Small Round Cell Tumor Cancer Stem Cells

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10.1136/jim-2021-SRMC.62

Purpose of Study Desmoplastic Small Round Cell Tumor (DSRCT) is a rare form of pediatric cancer that normally arises in the abdominal or pelvic cavity. Despite treatment with a combination of surgery, radiotherapy, and chemotherapy, the prognosis remains poor with a 5-year survival rate of 15–25%. One potential explanation for DSRCT’s poor treatment response is the existence of a subpopulation of cells known as cancer stem cells (CSCs). CSCs are chemoresistant, and can initiate tumors and form metastases. CSCs have been identified in a variety of tumors, including the closely related Ewing Sarcoma, which like DSRCT contains a translocation involving the EWSR1 gene. However, a CSC population has yet to be identified in DSRCT. Identifying and characterizing DSRCT CSCs will be an important step toward understanding and treating this deadly malignancy.

Methods Used Novel culture conditions excluding serum were established that allow DSRCT cells to grow as spheres. Cells were harvested and the expression of stemness genes was assessed using RT-qPCR and Western Blot. Flow cytometry will be used to investigate potential CSC markers including CD133 and CD44. To definitively establish the existence of a CSC population, the ability of DSRCT cells to form tumors at low seeding densities in NOD-SCID mice will be examined.
with NAFLD index (R= -0.40, p<0.0001), which was higher in diabetics (r= -0.49, p<0.0001). A multiple regression analysis model for predicting NAFLD index was performed: NAFLD = 1.6616 +0.0786*BMI +0.0520*age+0.0145*total muscle attenuation+0.0221*total fat attenuation (R² =0.43, p<0.001).

Conclusions In patients diagnosed with NAFLD, skeletal muscle to fat volume ratio and muscle attenuation, which are measures of sarcopenic obesity and myosteatosis respectively, were linked to increased risk of cirrhosis, particularly in individuals with diabetes. These findings highlight the importance of body composition assessment to guide clinical management in patients with NAFLD.

**THE RECOGNITION OF A NEW PATTERN OF GASTRIC EMPTYING IN SYMPTOMATIC PATIENTS**
GM Galura*, J Diaz, R McCallum. Texas Tech University Health Sciences Center El Paso, El Paso, TX

10.1136/jim-2021-SRMC.64

**Purpose of Study** Gastric emptying scintigraphy (GES) is the gold standard test utilized for the diagnosis of gastric motility disorders. Gastropareasis is characterized by delayed gastric emptying (GE). Dumping syndrome is distinguished by its early-onset rapid GE, both having varying degrees of post-prandial symptoms. We have observed a pattern of delayed-onset rapid gastric emptying (DRGE) in symptomatic subjects whose GE was interpreted as normal (<10% remaining at 4 hrs). Our objective was to identify the frequency of this entity in a large cohort of Hispanic-dominated, symptomatic patients who underwent a solid meal GES.

**Methods Used** The hourly GE decrements of 24 normal, asymptomatic, female-dominated subjects had been previously studied. The mean decrements and their respective standard deviations (SD) were obtained, and the upper limit cut-off values were set at +1 SD. We reviewed the GES results from symptomatic patients, performed in our institution from November 1, 2019, to October 1, 2020. Only GES, which were read as normal using traditional criteria (<10% remaining at 4 hrs), were included in the study.

**Summary of Results** We analyzed 122 GES results. The upper limit threshold of normal GE decrements (mean +1 SD) were 52.1% for 1–2 hr, 37.2% for 2–3 hr, and 19.0% for 3–4 hours. After applying the new cut-offs to the 122 GES results, we identified 10 patients (8.2%), 9 females, whose GE decrements exceeded these established thresholds. 3 patients (2.5%) exceeded the 1–2 hr decrement, 5 (4.1%) exceeded decrements for the 2–3 hr cap, and 2 patients (1.6%) had GE decrements that exceeded the 3–4 hr limit. All subjects had post-prandial symptoms with varying degrees of nausea, vomiting, fullness, abdominal pain, and stool urgency, which coincided with the hourly abnormal decrements. Outpatient follow-up management confirmed that pre-prandial anticholinergic therapy (dicyclomine) resolved those symptoms.

**Conclusions** We report a new entity DRGE, observed in 8.2% of patients whose GES was normal by current criteria. This new GE pattern explains their symptoms, which subsequently responded to appropriate medical therapy. Additional data is required to establish this syndrome’s incidence in larger sample sizes and other ethnic groups.

**IMPACT OF SURFACTANT PROTEIN-A ON IMMUNOMODULATORY PROPERTIES OF HUMAN AND MURINE BREAST MILK**
CM Meyer*, JL Alcain. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

10.1136/jim-2021-SRMC.65

**Purpose of Study** Human breast milk is known to reduce the incidence of necrotizing enterocolitis (NEC) in infants. Our previous mouse studies demonstrated that exogenous surfactant protein-A (SP-A) modulates intestinal inflammation and reduces the rates of NEC-like illnesses in SP-A-deficient pups. Published work suggests may breast milk contain SP-A. We hypothesize that SP-A is present in human and mouse breast milk and impacts inflammatory cytokines expression in mouse ileum.

**Methods Used** Human breast milk was collected at postpartum days 3 and 28. Mouse milk at postpartum days 1 to 10. The presence of SP-A in collected breast milk was detected through immunoprecipitation and Western blot analysis. The impact of wildtype (WT) mouse milk on SP-A-deficient (SPAKO) pup ileum was evaluated by a series of cross-rearing experiments. Pups were sacrificed on day of life (DOL) 7, 14, and 21 and expression of cytokine mRNA in terminal ileum was determined by real-time qRT-PCR.

**Summary of Results** SP-A was detected in human breast milk and wildtype mouse breast milk, but not in SPAKO breast milk. Expression of TLR-4, IL-1β, IL-6, and TNF-α was decreased in SPAKO pups housed with WT dams compared to SPAKO pups housed with SPAKO dams at all ages, but was significant only on DOL 14. In WT pups housed with SPAKO dams (compared to WT pups housed with WT dams) there was no difference in cytokine levels at all ages. However, TLR-4 levels were higher on DOL 14 and 21 in cross reared WT pups compared to controls, but only significant on DOL 14.

**Conclusions** SP-A is secreted in human and murine breast milk and plays a role in lowering baseline inflammation in murine pup terminal ileum at baseline. The peak effect of inflammatory depression associated with SP-A ingestion via breast milk was at DOL 14 in mouse pups, which correlates with human intestinal maturity of 26–32 weeks gestation, a critical period in the development of NEC in humans. This temporal relationship suggests that SP-A ingestion via breast milk may contribute to breast milk’s protective effect against NEC. Currently, we are assessing the effect of models of intestinal injury on inflammation and intestinal damage using the cross-rearing model.

**EVALUATION OF DYSPHAGIA IN CHILDREN: A SINGLE CENTER EXPERIENCE**

1AE Quarantelli*, T Benes, R Patel, Winer, E McCoy, Ferguson-Paul. The University of Tennessee Health Science Center College of Medicine, Memphis, TN; Le Bonheur Children’s Hospital, Memphis, TN

10.1136/jim-2021-SRMC.66

**Purpose of Study** At our institution we saw an increase in gastrostomy tube (g-tube) placements for patients with dysphagia in 2018. In 2019 we standardized our management with a multidisciplinary team. The purpose of our study is to...
compare the method of diagnosis, interventions and management of dysphagia at our institution in 2018 vs 2019.

Methods Used We retrospectively reviewed the charts of 192 patients with dysphagia admitted to Le Bonheur Children’s Hospital August 2018-December 2019. Demographics, presenting symptoms, co-morbid conditions, modified barium swallow (MBS) results and interventions such as thickener and g-tube placement were recorded.

Summary of Results A total of 105 charts were reviewed from 2018 and 87 from 2019. The majority of patients with dysphagia were premature infants 25–28 weeks gestation (53.3% vs 70.1%). The top 3 presenting symptoms were respiratory distress with feeds (51%), choking with feeds (34%) and difficulty with feeds/growth (29.2%). Laryngeal cleft was the most common ENT comorbidity in 2018 vs 2019 (40.4% vs 10.9%, p=0.001). Prolaryn® injection was done more often in 2018 (44.2% vs. 6.5%, p=0.001) and 2019 saw a rise in bedside scopes (60.9% vs 30.8%, p=0.003). More patients had an abnormal MBS done in 2018 vs 2019 (90.2% vs 83.7%, p=0.018) but more were diagnosed with dysphagia prior to having an MBS in 2019 (19.5% vs 18.1%, p=0.854). In 2018 more patients had improvement on repeat MBS following interventions (83.3% vs. 44.6%, p=0.001). The most common recommendations in 2018 vs 2019 were no oral feeding (30.4% vs 15.1%) and honey thickened feeds (34.3% vs. 30.2%). G-tube placement decreased from 51.4% in 2018 to 31% in 2019 (p=0.004).

Conclusions Infants and children with difficulty feeding and respiratory distress with feeds should be evaluated for dysphagia. Characteristic symptoms may correlate with an abnormal MBS. Trialing honey thickened feeds and acid blockers in patients with dysphagia without frank aspiration is a reasonable approach. A multidisciplinary team may help to elucidate the diagnosis. Optimal timing of repeat MBS after interventions is an area of further study. G-tube placement may be safely prevented by conservative medical management without increased risk of aspiration.

Primary Fetal Non-Human Primate Organoid Models for Intestinal Development and Inflammation

Purpose of Study Necrotizing enterocolitis (NEC), the most common gastrointestinal emergency in preterm infants, is a difficult disease to model. Research in animal models has, thus far, failed to lead to major translational breakthroughs. Diverse and complex risk factors for the disease deem most models, though often incorporating multiple risk factors, physiologically simplistic. Organoids are 3D in vitro models, derived primarily from LGR5+ stem cells, that more closely recapitulate the epithelium of the in vivo organ. In the small intestine, stem cells from the crypts allow for continued proliferation of organoids in both size and number. While the cell-type composition of 3D organoid models is an improvement over traditional 2D monoculture, 2D monolayers composed of organoid-derived cells in physiologically-relevant composition enables access to both apical and basal sides of the epithelium.

Methods Used We extracted fresh tissue from the terminal ileum of a male, c-sectioned, fetal olive baboon (Papio anubis), isolated intestinal crypts through a series of extractions and filtrations, and plated crypt fragments in 3D domes of base- line membrane extract (BME). Once at sufficient density, organoids were passaged, trypsinized, and plated in Transwells coated with BME.

Summary of Results Organoids in both 3D and 2D formats provide more physiologically meaningful data than experiments run in individual cell lines while retaining the relative simplicity of traditional cell culture methods. Additionally, derivation of organoids from a single source allows for longitudinal standardization of environmental and genetic factors.
Organoids will be challenged with live bacteria and/or bacterial products to simulate intestinal inflammation during the neonatal period.

Conclusions Non-human primate (NHP) in vitro models can advance neonatal NEC research as stepping stones between standard immortalized cell culture of individual cell lines and human intestinal organoid models, for which tissue is often difficult to acquire.

Health care research, quality improvement & patient safety, population health & precision medicine

10:45 AM 
Friday, February 26, 2021

69 DO WE KNOW THE DOSE OF DIURETICS REQUIRED FOR BRONCHOPULMONARY DYSPLASIA IN PRETERM INFANTS?

S Osman*, S Munir, J Burdine, S Jain. The University of Texas Medical Branch at Galveston, Galveston, TX

10.1136/jim-2021-SRMC.69

Purpose of Study Bronchopulmonary dysplasia (BPD) affects 50% of infants born with birth weight <1000 g. Diuretics are frequently used to manage BPD. Combination of hydrochlorothiazide and spironolactone is used at varying doses. The purpose of this study is to determine the correlation of the dose of diuretics used in the management of BPD and electrolyte abnormalities requiring supplementation.

Methods Used In this observational retrospective study, we included all preterm infants (<30 weeks) born at the University of Texas Medical Branch in Galveston, Texas. Infants ≥36 weeks post menstrual age and received diuretics for BPD were included. Infants were divided into Group I which included infants who received half dose of hydrochlorothiazide and spironolactone (1 mg/kg) and in Group II infants received full dose hydrochlorothiazide and spironolactone (2 mg/kg/day). All infants received standard NICU care. Infants were monitored for hyponatremia, hypokalemia and hypochloremia requiring sodium supplementation for hyponatremia. Hyponatremia was defined as serum sodium ≤133 mmol/L, hypokalemia ≤3.0 mmol/L and hypochloremia serum chloride ≤90 mmol/L.

Summary of Results 31 infants were included in the study (Group I =11 and group II =20). Between groups, there were no significant differences in gender, gestational age, birth weight, ethnicity, patent ductus arteriosus requiring treatment, intraventricular hemorrhage (grade ≥2), retinopathy of prematurity and necrotizing enterocolitis, maternal smoking and use of antenatal steroids. Chorioamnionitis (p = 0.03) and prolonged rupture of membranes (p = 0.05) occurred more frequently in group II. Severity of BPD between the groups was similar. Infants in group I had no hyponatremia, hypochloremia, and sodium supplementation for hyponatremia. Group II, 6 infants had hyponatremia (p = 0.06), 7 had hypochloremia (p = 0.03) and 9 required sodium supplementation for hyponatremia and/or hypochloremia (p = 0.01).

Conclusions Use of full dose diuretics cause electrolyte abnormalities requiring supplementation. Further studies are needed to determine if half diuretic dose is effective and safe.

70 A QI PROJECT TO STANDARDIZE MANAGEMENT OF GASTROSCHISIS IN THE NICU

L Dalal*, KM Kuehn, MG Johnson, C Demoskes, M Grant, M Austin, M Chang, C Anejii. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

10.1136/jim-2021-SRMC.70

Purpose of Study Gastroschisis is a congenital defect of the abdominal wall affecting 1 in every 10,000 deliveries. Patients with this defect are managed in the NICU with surgical and medical interventions. However, there is a significant variation in the care provided within and between different NICUs. For other patient populations, evidence shows that standardizing care leads to better patient outcomes. The purpose of this quality improvement (QI) initiative is to standardize the care of gastroschisis patients from birth to discharge. This initial stage involved evaluating 12 years of patients who were managed for gastroschisis at our single-center to establish baseline data.

Methods Used We conducted a retrospective chart review on all patients born with gastroschisis from December 2008 through May 2020 at Children’s Memorial Hermann in Houston, Texas. Patient outcomes of interest included the type of gastroschisis and surgical closure, antibiotics exposure, enteral and parenteral nutrition, and growth, and length of stay (LOS). Complex gastroschisis was defined as gastroschisis that presented along with intestinal atresia, perforation or volvulus.

Summary of Results One hundred and fifty patients were included with 53.3% male, median gestational age of 36 weeks, and mean birthweight 2381 g. Most cases were simple (n=129, 86%) with only 21 complex cases. The median LOS was 37.5 and ranged from 13–291 days. LOS was affected by the complexity of gastroschisis, with simple having a significantly shorter LOS (P=0.0008). There was also a large amount of variability within each group, with average LOS for simple =50.9±46.9 days, and average LOS for complex =120.5±80.4. TPN administration duration ranged between 8 and 257 days, with a median length of 26 days. Most (98%) received at least one course of antibiotics and 42% received two or more courses.

Conclusions Management and outcomes for gastroschisis patients were variable, both across and within simple and complex cases. We have developed a guideline to standardize care of gastroschisis patients from birth through discharge. At six months and one year from the institution of the guideline, we will track the patients newly admitted and compare their outcomes to the baseline.

Abstract 69 Table 1

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Group I</th>
<th>Group II</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyponatremia no.(%)</td>
<td>0 (0)</td>
<td>6 (30)</td>
<td>0.065</td>
</tr>
<tr>
<td>Hypochloremia no.(%)</td>
<td>0 (0)</td>
<td>7 (33)</td>
<td>0.03</td>
</tr>
<tr>
<td>NaCl Supplementation no.(%)</td>
<td>0 (0)</td>
<td>9 (45)</td>
<td>0.01</td>
</tr>
</tbody>
</table>
WELL CHILD CARE IS AFFECTED BY INTRAUTERINE SUBSTANCE EXPOSURE
C Suiter, M Woods*, DS Shah. East Tennessee State University James H Quillen College of Medicine, Johnson City, TN
10.1136/jim-2021-SRMC.71

Purpose of Study To determine the difference between intrauterine substance exposure (ISE) and non intrauterine substance exposure (non-ISE) groups for well-child care (WCC) adherence, nonroutine healthcare use, vaccine completion and mortality in the first 2 years of life.

Methods Used After local IRB approval, this cross-sectional study identified substance exposed infants seen at ETSU Pediatrics between January 1, 2014 - June 1, 2020 in the EHR using ICD-10 Codes. The patient information was extracted and de-identified by the Population Health Department at ETSU. This produced 724 substance exposed infants (ISE) and 1000 non-exposed (non-ISE) infants seen in the same time frame as a control group. The data was collected in Excel and analyzed by SPSS using an independent sample t-test to test for statistical significance. We defined total WCC adherence as completing all 8 successive well visits.

Summary of Results There is a statistically significant difference in average well visits reported between the two groups as seen in table 1. However, a higher percentage of the non-ISE group completed all 8 WCC visits to earn total adherence. Similarly, there is a statistically significant difference in nonroutine visits and immunization rate. Mortality in the ISE group approaches significance.

Conclusions WCC is affected by a history of ISE compared to non-exposure. WCC adherence, immunization rate and nonroutine healthcare use is significantly higher for the non-ISE group, while mortality is higher in the ISE group. Attention to WCC may improve mortality and health outcomes in at risk populations.

LETHAL MEANS ASSESSMENT: RESIDENT INITIATIVE TO IMPROVE SCREENING FOR ACCESS TO FIREARMS IN A PEDIATRIC EMERGENCY DEPARTMENT
CL Stegall*, J Ayala, K Allen, K Barton, A Kumar-Veerawasmy. Medical University of South Carolina, Charleston, SC
10.1136/jim-2021-SRMC.72

Purpose of Study Suicide is the second leading cause of death among adolescents in the United States. The most common method for completed suicide is use of a firearm. Studies have demonstrated emergency department (ED) providers do not adequately screen for access to firearms, including amongst pediatric psychiatric patients. Our study aims to increase the frequency of provider screening for access to firearms among pediatric patients presenting to the emergency department for a mental health complaint, as well as implement interventions for positive screens.

Abstract 71 Table 1 Analysis of healthcare use between non-substance exposed and substance-exposed infants

<table>
<thead>
<tr>
<th>Analysis of healthcare use between non-substance exposed and substance-exposed infants</th>
<th>Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCC Total Adherence</td>
<td>Non-Substance Exposed 16.40%</td>
<td>0.002</td>
</tr>
<tr>
<td>Substance Exposed 11.33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Well Visits</td>
<td>Non-Substance Exposed 3.88 visits</td>
<td>0.016</td>
</tr>
<tr>
<td>Substance Exposed 4.19 visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Sick/Nonroutine Visits</td>
<td>Non-Substance Exposed 6.22 visits</td>
<td>0.054</td>
</tr>
<tr>
<td>Substance Exposed 5.62 visits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization by 2</td>
<td>Non-Substance Exposed 40.30%</td>
<td>0.000</td>
</tr>
<tr>
<td>Substance Exposed 37.48%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality Rate</td>
<td>Non-Substance Exposed 0.30%</td>
<td>0.059</td>
</tr>
<tr>
<td>Substance Exposed 1.10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newborn/1 month visit</td>
<td>Non-Substance Exposed 65.60%</td>
<td>0.000</td>
</tr>
<tr>
<td>Substance Exposed 85.22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 month visit</td>
<td>Non-Substance Exposed 55.30%</td>
<td>0.000</td>
</tr>
<tr>
<td>Substance Exposed 69.61%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 month visit</td>
<td>Non-Substance Exposed 54.90%</td>
<td>0.001</td>
</tr>
<tr>
<td>Substance Exposed 62.57%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 month visit</td>
<td>Non-Substance Exposed 51.90%</td>
<td>0.076</td>
</tr>
<tr>
<td>Substance Exposed 56.22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 month visit</td>
<td>Non-Substance Exposed 44.20%</td>
<td>0.188</td>
</tr>
<tr>
<td>Substance Exposed 41.02%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 month visit</td>
<td>Non-Substance Exposed 42.80%</td>
<td>0.460</td>
</tr>
<tr>
<td>Substance Exposed 41.02%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15/18 month visit</td>
<td>Non-Substance Exposed 24.80%</td>
<td>0.335</td>
</tr>
<tr>
<td>Substance Exposed 22.79%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 month visit</td>
<td>Non-Substance Exposed 32.30%</td>
<td>0.005</td>
</tr>
<tr>
<td>Substance Exposed 25.97%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Methods Used This is a resident-driven quality improvement project created for the pediatric emergency department setting. Baseline data of firearm screening rates was collected via a retrospective chart review of patients who presented to the Medical University of South Carolina’s Pediatric ED with the chief complaint of ‘psychiatric evaluation.’ Interventions included resident education, Be SMART training, a smart phrase to facilitate documentation, and workstation reminders. For positive screens, families were given Be SMART educational handouts and gun locks. Monthly chart reviews to determine frequency of screening and interventions made for positive screens were reviewed. Results were compared with the Wald technique to determine 95% confidence intervals.

Summary of Results The baseline mean rate of monthly firearm screening prior to our first intervention was 14.38% (CI ± 4%), with 49 of 340 patients screened by ED providers. Of these 49 patients, 26 has positive screens. After our first intervention, firearm screening rates for month one increased to 25.8% (CI ± 10%) with 17 of 66 patients screened, and 8 positive screens. Month two increased to 32.4% (CI ± 11%) with 23 of 71 patients screened, and 14 positive screens.

Conclusions Since many suicidal patients first present to an ED setting, ED providers should make the first intervention to establish a safe environment and mitigate risks for suicidal completion. Educational interventions focused on firearm screening for providers in a pediatric ED can have a positive impact on firearm screening rates for children presenting with mental health complaints. Future efforts will include seeking provider feedback to identify barriers to screening.

73 IMPACT OF TELEHEALTH VISIT AND SOCIOECONOMIC STATUS ON HYDROXYUREA RESPONSE IN SICKLE CELL ANEMIA
S Shaner*, S Bhatia, J Lebensburger. The University of Alabama at Birmingham School of Medicine, Birmingham, AL
10.1136/jim-2021-SRMC.73

Purpose of Study The UAB Pediatric Sickle Cell Clinic cares for patients at an academic center (UAB) and satellite clinics. Laboratory results are not available at point of care for satellite clinic patients but are available for the academic center patients. Therefore, hydroxyurea (HU) dosing changes are made via telehealth for the satellite clinic patients. We hypothesized that dose modifications via telehealth visits or patients socioeconomic status (SES) would not affect HU response.

Methods Used One-year retrospective review of 172 patients prescribed HU at UAB (n=107) and satellite clinics (n=65). We abstracted age, clinic location, CBC, HbF, number of clinic or ED visits, and hospital admissions. SES was derived using residence zip code. We constructed two separate multivariable regression models to examine the impact of i) type of clinic visits; ii) SES status.

Summary of Results The mean age of 172 participants was 11 ±5y, mean Hb was 8.5±1.1 g/dL, mean HbF% was 13±7. We identified 107 participants prescribed HU at the academic center and 65 at satellite clinics. The mean poverty level was 18±4, household income was 50,119±8,298, and 14.4% of adults had less than a high school diploma.

We identified no significant differences in age (11.5y vs 10.9, p=0.5), Hb (8.5 g/dL vs 8.6, p=0.6), HbF (13.2% vs.13.7, p=0.1), and monthly admissions (0.99 vs. 0.85, p=0.5) or pain admissions per year (0.86 vs. 0.74, p=0.6) in Birmingham as compared to satellite clinic. Patients in Birmingham had a statistically higher number of clinic visits (2.9 vs 2.5, p=0.006). Satellite clinic patients were identified with significantly higher poverty level (p<0.01), lower median household income (p<0.01) and lower education (p<0.01). When analyzing HbF by socioeconomic data, we did not identify an association between HbF values with poverty level (p=1.0), median household income (p=0.8) or percent of adults in the community with less than a high school diploma (p=0.7). In regression analysis, HbF% was associated with clinic visits (p=0.02) and age (p=0.003) but not associated with clinic location or socioeconomic data.

Conclusions Our data demonstrate that telehealth for HU dosing provided a similar level of HU response to in-person HU dosing adjustments independent of clinic location or socioeconomic data.

74 DISCREPANT FIB-4 AND NFS SCORES IN A PRIMARY CARE NAFLD COHORT
A Schreiner*, S Livingston, J Marsden, J Zhang, M Gebregziabher, V Durkalski-Mauldin, J Koch, P Mauldin, D Rockey, W Moran. Medical University of South Carolina, Charleston, SC
10.1136/jim-2021-SRMC.74

Purpose of Study Non-alcoholic fatty liver disease (NAFLD) and advanced fibrosis risk are underdiagnosed and underassessed in primary care. Using natural language processing (NLP) to identify patients with radiographic evidence of hepatic steatosis, we evaluated the agreement between Fibrosis-4 (FIB-4) and NAFLD fibrosis scores (NFS) in primary care.

Methods Used This retrospective cohort study of electronic record data included adults with at least one radiographic report of hepatic steatosis and no other known chronic liver disease. We calculated patient-level FIB-4 and NFS scores and categorized them by advanced fibrosis risk. The agreement between risk categories was analyzed using weighted kappa. Spearman correlation and Bland-Altman analysis were used to assess correlation and agreement in the continuous FIB-4 and NSF scales respectively. A multinomial logistic regression model was developed to evaluate the associations between clinical variables and discrepant FIB-4 and NFS results.

Summary of Results The cohort included 767 patients with radiographic evidence of hepatic steatosis. Advanced fibrosis risk assessment categories disagreed in 43% of the sample and FIB-4 and NFS scores would have resulted in the different disease. We calculated patient-level FIB-4 and NFS scores and categorized them by advanced fibrosis risk. The agreement between risk categories was analyzed using weighted kappa. Spearman correlation and Bland-Altman analysis were used to assess correlation and agreement in the continuous FIB-4 and NSF scales respectively. A multinomial logistic regression model was developed to evaluate the associations between clinical variables and discrepant FIB-4 and NFS results.

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Conclusions In a primary care NAFLD cohort created by applying NLP to radiographic report results in an EHR, FIB-4 and NFS fibrosis risk scores were often in disagreement. Non-invasive test selection can impact clinical decision making and may contribute to racial disparities of care.

Cardiovascular I

1:00 PM
Friday, February 26, 2021

75  PREDICTORS OF MAJOR ADVERSE CARDIOVASCULAR OUTCOMES IN SARS-COV-2 PATIENTS ADMITTED TO A QUARTERNARY HEALTHCARE SYSTEM SERVING SOUTHWEST US

M Sidhu*, Methodist Health System, Dallas, TX
10.1136/jim-2021-SRMC.75

Purpose of Study As a predominantly respiratory viral illness, it comes as no surprise that severe respiratory failure has portended greater risk of mortality in SARS-CoV-2 patients. Data on the predictors of major adverse cardiovascular events (MACE) in SARS-CoV-2 infected patients is limited and at times providing conflicting reports.

Methods Used A retrospective review was performed on 500 hospitalized patients that tested positive for SARS CoV-2 between March and July 2020 at a major quaternary health care system in a metropolitan area of the southwestern United States. Baseline characteristics, co-morbidities, medications, presenting complaints, vitals, telemetry, electrocardiograms, echocardiograms, laboratory values and clinical outcomes of their disease course were identified. Analyses were performed on this patient pool, which was divided into two cohorts: (i) patients that experienced a MACE [a composite of myocardial infarction (MI), stroke, pulmonary embolism (PE), deep venous thrombosis (DVT), or shock requiring vasopressor support] and (ii) patients that did not experience a MACE. Pearson’s chi square test was used to examine the difference in mortality between those who had a MACE and those who did not have a MACE.

Summary of Results Of the 496 hospitalized patients for whom final discharge disposition was available, 122 had a MACE, and 374 did not. Patients who experienced MACE were older (Median Age 63 years with MACE and 58 years with no MACE). Patients who have past medical history of CAD are more likely to have MACE (OR=2.1, 95% CI = 1.1). Elevated NT-pro-BNP (OR= 2.872277, 95% CI = 1.565311), Elevated IL 6 (OR= 5.916667, 95% CI = 2.6538), Elevated Troponin-I (OR= 4.043929, 95% CI = 2.41664) were all independently associated with higher MACE. Race, Gender, Ethnicity, Smoking status, body mass index, prior use of angiotensin receptor blockers, history of hypertension, diabetes, chronic kidney disease were not associated with MACE. SARS-CoV-2 infected patients who develop MACE were 16 times more likely to die during the hospitalization.

Conclusions Advanced age, history of CAD, elevated NT-pro-BNP, elevated IL-6, elevated Troponin I are all independent predictors of MACE in SARS-CoV-2 infected patients.

76  CARDIAC PREOPERATIVE ASSESSMENT OF VASCULAR SURGERY PATIENTS

K Pasha*, E Levine, E Schultz, A Menon, N Coplan. Lenox Hill Hospital, New York, NY
10.1136/jim-2021-SRMC.76

Purpose of Study Cardiac preoperative evaluation may be considered in the preoperative assessment of vascular surgery patients. The purpose of this study was to perform a retrospective analysis of how clinicians are utilizing this tool and its effects on preoperative cardiac work up.

Methods Used We performed a single center retrospective analysis of patients who underwent non-urgent carotid endarterectomy or peripheral bypass surgery over a 12 month period. Patients with a history of myocardial infarction or congestive heart failure exacerbation 30 days prior to surgery were excluded. Inpatient and outpatient preoperative evaluations were included. A result was considered statistically significant at p<0.05.

Summary of Results The study included 70 patients (69% male) with mean age of 71.7 (±9.6) years; predominant risk factors included hypertension (94%), hyperlipidemia (89%), and a history of smoking (60%). Forty- three (61%) patients had carotid surgery and 27 (39%) patients had bypass surgery. Forty-four (63%) patients had cardiac evaluation. Compared with patients who did not have cardiac evaluation, there was no significant difference in history of coronary disease (59% vs 42%, p=0.17), heart failure (18 vs 11, p=0.5), diabetes (43 vs 50%, p=0.58), hypertension (93 vs 96%, p=1) or hyperlipidemia (88 vs 88%, p=1). Revised cardiac index was performed in 9/44 (20.5%) patients and Gupta score was used in 3/44 (7%) patients who had cardiac evaluation; neither score was performed in patients without cardiac evaluation. There was no significant difference in likelihood of having a cardiac evaluation based on type of surgery (p=0.3), but risk score evaluation was more likely performed in patients undergoing bypass surgery (35 vs 5%, p=0.01).

Cardiac evaluation was associated with higher likelihood of getting an echocardiogram (70 vs 46%, p=0.04), EKG stress test (34 vs 8%, p=0.01), and myocardial perfusion stress test (52 vs 15%, p=0.002).

Conclusions Cardiac preoperative evaluation in patients undergoing vascular surgery results in higher likelihood of cardiac noninvasive testing. Preoperative risk indices are a crucial tool in this population and are significantly underutilized.

77  ASSESSMENT OF THE CORRELATION BETWEEN CAROTID ARTERY MEAN INTIMA-MEDIA THICKNESS AND BRAIN NATRIURETIC PEPTIDE IN PATIENTS WITH PSORIASIS

1ETeae*, 2M Shahid-Dadriz, 3N Niknejad, 2F Rajabi, 2H Haghhighat Khah, 7N Niknejad, 3S Younespour, 1T Naguib. Texas Tech University Health Sciences Center, Amarillo, TX; 2Shahid Beheshti University of Medical Sciences, Tehran, Iran (the Islamic Republic of); 3Tehran University of Medical Sciences, Tehran, Iran (the Islamic Republic of)
10.1136/jim-2021-SRMC.77

Purpose of Study Numerous studies have documented an association between psoriasis and subclinical atherosclerosis. Our aim was to investigate the effects of psoriasis on the levels of
Abstract 77 Table 1 Correlation between mean intima-media thickness (MIMT) and all other variables evaluated

<table>
<thead>
<tr>
<th>Variables</th>
<th>MIMT Patients with psoriasis</th>
<th>MIMT Healthy controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>NT-proBNP</td>
<td>0.50</td>
<td>0.33</td>
</tr>
<tr>
<td>Age</td>
<td>0.63</td>
<td>0.59</td>
</tr>
<tr>
<td>BMI</td>
<td>0.003</td>
<td>0.24</td>
</tr>
<tr>
<td>Duration of psoriasis</td>
<td>0.31</td>
<td>-</td>
</tr>
<tr>
<td>Psoriasis area and severity index</td>
<td>0.17</td>
<td>-</td>
</tr>
</tbody>
</table>

N-terminal prohormone B type natriuretic peptide (NT-proBNP) and clarify whether this factor correlates with the evaluation of subclinical atherosclerosis, measured with mean intima-media thickness (MIMT) of carotid artery.

Methods Used

Sixty-one psoriatic patients and sixty-one healthy, age and sex-matched volunteers were enrolled. MIMT was assessed via ultrasonography and serum NT-proBNP level was measured by electrochemiluminescence.

Summary of Results

The median NT-proBNP level was 26.67 (IQR: 15.15–43.03) in patients with psoriasis and 17.45 (IQR: 12.35–20.80) in the control group (P< 0.001). Psoriasis was significantly associated with high NT-proBNP after controlling for the effects of age and gender (adjusted R2=0.24, F=13.40 and p<0.0001). The median NT-proBNP level was 57.98 (IQR: 33.74–91.30) in patients with arthritis and 23.14 (IQR: 14.30–36.31) in patients without arthritis (P= 0.002).

The mean MIMT was significantly higher in patients than control subjects (P<0.0001). MIMT was positively correlated with age and serum NT-proBNP level in both groups. In patients with psoriasis, MIMT also positively correlated with the disease duration (table 1).

Conclusions

NT-proBNP levels correlate with MIMT of the carotid artery and may be used as a predictor for subclinical atherosclerosis in patients with psoriasis.
Abstract 79 Table 1

<table>
<thead>
<tr>
<th>Psychiatric diagnosis</th>
<th>Yes (N=2174)</th>
<th>No (N=3170)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>N % (n)</td>
<td>N % (n)</td>
</tr>
<tr>
<td>Age [mean (SD)]</td>
<td>2174 64.07 (15.17)</td>
<td>3170 63.40 (16.20)</td>
</tr>
<tr>
<td>Female</td>
<td>2174 60.95% (1304)</td>
<td>3170 60.95% (1325)</td>
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<tr>
<td>Alcohol use</td>
<td>2000 20.82% (655)</td>
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<tr>
<td>Drug use</td>
<td>2125 12.00% (240)</td>
<td>2174 12.00% (240)</td>
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<td>Smoking history</td>
<td>2174 62.82% (1335)</td>
<td>2174 62.82% (1335)</td>
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<tr>
<td>Length of stay [mean (SD)]</td>
<td>1.00 PM</td>
<td></td>
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<tr>
<td>Readmit 30 day CHF</td>
<td>2174 10.03% (318)</td>
<td>3170 10.03% (330)</td>
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<tr>
<td>Readmit 60 day CHF</td>
<td>2174 14.70% (466)</td>
<td>3170 14.70% (469)</td>
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<tr>
<td>Readmit 30 day all cause</td>
<td>2174 15.17% (481)</td>
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<tr>
<td>Readmit 60 day all cause</td>
<td>2174 21.92% (695)</td>
<td>3170 21.92% (731)</td>
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<tr>
<td>Mortality</td>
<td>2174 24.42% (774)</td>
<td>3170 24.42% (675)</td>
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</table>

* Welch’s two-sample t-tests were used to analyze Age and LOS. Pearson’s χ² tests were used to analyze the remaining variables.

Purpose of Study

Diabetes mellitus (DM) and hypertension (HTN) have been associated with adverse left ventricular (LV) remodeling. However, as DM and HTN often occur concurrently, the independent effects of DM and HTN on LV remodeling have not been adequately assessed.

Methods Used

Jackson Heart Study participants (n=4143 African Americans) at baseline exam with echocardiographic measures were stratified into 4 groups: neither DM nor HTN (n=1643), only DM (n=152), only HTN (n=1669), or both DM and HTN (n=679). Variations in baseline echocardiographic measures of LV structure and function, and brain natriuretic peptide (BNP) levels among these groups were evaluated by multivariable regression adjusting for covariates.

Summary of Results

Mean age of the participants was 52±1 years and 63.7% were women. LV mass index (LVM) was not significantly different in participants with only DM compared to participants with neither DM nor HTN (p=0.8). LVM was 7.9% (6.0 g/m²) higher in participants with only HTN and 10.8% (8.1 g/m²) higher in participants with both DM and HTN compared to those with neither (all p<0.001). Similarly, LV wall thickness (relative, posterior, and septal) and BNP levels in participants with only DM were not significantly higher than in participants with neither (all p>0.05). However, participants with both demonstrated significantly higher LV wall thickness and BNP levels than participants with neither (all p<0.05).

Conclusions

In this cross-sectional analysis, DM was not associated with changes in LV structure or function unless participants also had HTN. These data suggest that HTN is the main driver of cardiac structural and functional changes in patients with DM.

Medical Education/Medical Ethics/Advocacy

1:00 PM

Friday, February 26, 2021

PREDICTIVE FACTORS FOR SPECIALIZING IN MEDICINE

E Lamar*, The University of Alabama at Birmingham School of Medicine, Huntsville, AL.

Purpose of Study

The path to choosing a medical career is complex requiring one to consider personal beliefs, values, past experiences, and future expectations. With a growing shortage of physicians, especially in primary care, determining what influences students to choose a particular medical career can provide insight into any controllable factors that medical schools and residencies can modify to increase primary care physician. This study investigated the ability to predict an individual’s career choice based on certain predictive factors.

Methods Used

Data was collected via survey from 2003 to 2015 on incoming first-year medical students at the University of Alabama at Birmingham School of Medicine. Following graduation, residency match data was collected on the 1351 participants and each categorized into primary care specialty and specialized medicine. The data was analyzed for factors that predicted whether a student would choose primary care or to specialize.

IMPACT OF DIABETES AND HYPERTENSION ON LEFT VENTRICULAR STRUCTURE AND FUNCTION IN AFRICAN AMERICANS: THE JACKSON HEART STUDY

1A Hamid*, 1W Yimer, 2AA Oshunbade, 3D Kamimura, 4D Clark, 5ER Fox, 6p Munter, 4D Shimbo, 4A Pandey, 4A Shah, 4Y Min, 4R Mentz, 4D Jones, 4A Bertoni, 1JE Hall, 1AH a mid*, 1W Yimer, 1AA Oshunbade, 2DK a mi mur u, 1DC l ar k, 1ER Fox, 3P Munter, 4D Jones, 5A Pandey, 6A Shah, 1YM i n, 7R Mentz, 1D Jones, 8A Bertoni, 1JE Hall, 1AH a mid*.
Summary of Results Out of twelve independent factors, six were statistically significant. Financial incentive, level of expertise, and opportunity to specialize were associated with becoming a specialist. Opportunity to teach, variety in the practice, and interactions with patients were associated with becoming a primary care physician. The model predicted the students who matched in Primary care with 53.1% accuracy and predicted those who specialized with 72% accuracy. The model had an overall accuracy of 63.4%.

Conclusions Although there are not clear determinants of knowing what career a medical student will ultimately choose, this study highlights six predictive factors to suggest whether an individual has a higher likelihood of entering into primary care or specialized medicine.

COVID-19 EFFECTS ON MENTAL HEALTH AND WELL-BEING OF TULANE UNIVERSITY SCHOOL OF MEDICINE STUDENTS

TM Tran, W Provosty, Y Fang*, K Weisbecker, M Myint. Tulane University School of Medicine, New Orleans, LA

Purpose of Study The COVID-19 pandemic has had a significant effect on the mental health of healthcare workers, but current literature lacks the impact of the pandemic on medical students. This study aims to assess the impact of COVID-19 and social isolation on medical student resilience and burnout.

Methods Used A REDCap survey created at the University of Chicago was distributed to 21 medical school programs from May 26th to June 22nd, 2020. The survey components included basic demographics and two main questionnaires: Perceived Stress Scale (PSS), Maslach Burnout Inventory - Human Services Scale (MBI). Data from Tulane University School of Medicine (TUSOM) students was specifically analyzed using SPSS version 26. Corresponding z and t tests were run comparing respective normative tables provided by the questionnaire manuals and current literature. ANOVA was run to determine in-group differences.

Summary of Results A total of 201 TUSOM students were surveyed across four classes. For PSS, both males (p < 0.001) and females (p < 0.001) displayed greater levels of stress compared to a pre-COVID norm table and TUSOM females were disproportionately more stressed than males (p = 0.007). Across the four classes, an ANOVA showed statistically significant higher perceived stress scores in M2s compared to M1s (p = 0.013). MBI results showed significantly higher exhaustion (p < 0.001) and a lower sense of accomplishment (p < 0.001) when compared to a normative table. Both males (p < 0.001) and females (p < 0.001) scored higher on resilience than a normative table.

Conclusions Overall, students were more stressed, and burnt out during the COVID-19 pandemic compared to pre-COVID normative tables provided by each questionnaire’s manual. Programs must be designed to help students through these times of global crises. TUSOM, for one, provided students to compare perceived stress and burnout scores after the pandemic.

IMPACT OF AN EARLY LITERACY VOLUNTEER PROGRAM ON MEDICAL STUDENT CLINICAL EXPERIENCE

C Nguyen*, KE Gerth, A Caldwell, M Dunlap. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

Purpose of Study Medical students have limited exposure to pediatric patients and limited education on how to interact with the families of pediatric patients. Reach Out and Read (ROR) is an evidence-based program promoting early literacy. The ROR model includes a volunteer reading program that promotes reading aloud in clinics. Med student volunteers at our institution are trained to model shared-reading to children, interact with and create a stimulating environment for patients and families. This program provides an opportunity to examine the impact of volunteering on clinical interaction skills with pediatric patients and families. This study analyzes the impact of volunteering on various aspects of med student education. We measured knowledge of how to model shared-reading, families, clinical experience, and impact of volunteering on academic career.

Methods Used 145 current med students, both volunteers and non-volunteers, completed an anonymous electronic survey measuring several variables: clinical interaction skills, knowledge of modeling shared-reading, and the impact of volunteering on academic career. Data were stratified by volunteer status. Quantitative and qualitative data were analyzed.

Summary of Results 89.5% of volunteers vs 19.8% of non-volunteers reported knowing how to model shared reading to families (p<0.0001), 89.5% of volunteers vs 63.5% of non-volunteers reported feeling comfortable working with families of pediatric patients (p=0.02). 94.7% of volunteers agreed that volunteering with ROR impacted their career while in medical school. Student reported being ‘more comfortable in the clinic setting and with families’ and that volunteering ‘reminded me of why I chose medicine and why I am passionate about advocating for children’s health from a biopsychosocial model.’

Conclusions Participating in the ROR volunteer program is associated with two crucial skills for future pediatricians: interacting with pediatric patient families and modeling shared-reading to families. Involvement also impacts the academic career of med students in meaningful ways. Incorporation of opportunities like the ROR volunteer reading could improve medical student education and clinical skills during their training.

EVALUATION OF A PEDIATRIC RESIDENCY HUMANITIES ELECTIVE

KE Gerth*, C Hester. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

Purpose of Study The purpose of this study is to evaluate the effects of a medical humanities elective course for pediatric residents. Specifically, the study aims to determine if participation in a humanities course affects empathy, cultural competence, patient care, and well-being in pediatric residents. The course will be evaluated through standard post course evaluations as well as broad exploration of the participant’s
IMPLEMENTATION OF A NOVEL LEADERSHIP SKILLS CURRICULUM FOR SENIOR PEDIATRIC RESIDENTS

1DM et al., 2P Mullan, 3P Farrell, 1H Newton, 2R Kapoor. Eastern Virginia Medical School, Norfolk, VA; 2Children’s Hospital of The King’s Daughters, Norfolk, VA; 3Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

Purpose of Study Although physician leadership is linked to improved health care quality and may decrease burnout, leadership is rarely a focus during residency. We aim to (1) identify leadership skills that senior residents require to effectively function as a leader; (2) develop a leadership curriculum to address the identified needs; and (3) deliver the curriculum in an open forum with peer-to-peer learning.

Methods Used During the 1st year, focus groups were held with senior pediatric residents to understand their leadership experiences and identify training needs. Notes were recorded and independently coded by 2 researchers, with thematic saturation achieved. In the 2nd year, each session focused on one leadership skill identified to collect more in-depth understanding of their training needs. In the 3rd year and beyond, a formalized curriculum was implemented by facilitating open discussion on each leadership skill and then introducing evidence-based strategies. At the end of each year, an anonymous survey was conducted to inform curricular changes.

Summary of Results 4 major themes were identified: (1) Effective and timely communication is indispensable in promoting safe patient care and avoiding conflict. (2) Training in teaching methods is desired, especially with various levels of learners and different settings. (3) Time management, availability of resources, and team logistics were often learned through trial-and-error. (4) Self-care, self-regulation and peer debriefing are relied upon to manage negative emotions; rarely are coping techniques employed in ‘real-time.’ Feedback from the monthly group sessions was overwhelmingly positive. 27 (61%) of 44 participating residents responded to the survey. 23 (85%) residents found the sessions useful, 4 (15%) were neutral, and none rated the sessions not useful. 26 (96%) reported that the sessions should be continued.

Conclusions Senior residents currently face gaps in leadership training and may benefit from additional instruction. We have developed a formalized curriculum that delivers leadership training based on identified needs and available evidence. The curriculum will be updated annually based on individual needs, available evidence, and survey feedback.

PEDiatric PROVIDER PRACTICES REGARDING SCREEN TIME USE

E Cahill*, C Garbe, M Durlap. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

Purpose of Study Nearly 87% of children exceed the recommendations for screen time (ST) use and ST triples from ages 12 months to 3 years, contributing to adverse effects across multiple health domains. Pediatric providers (PPs) are in a unique position to support behavior change; however, there is little research into provider practices in this regard. This study examined PPs’ screen time-management practices and perceptions.

Methods Used Physicians, residents and mid-level providers in Pediatric and Family Medicine programs and 10 community-based clinics completed an anonymous electronic survey about their ST management practices in pediatric patients. Likert scales quantified responses from 1 (never/strongly disagree) to 5 (always/strongly agree). Responses of 4 and 5 were combined to denote agreement/usual practice. Data were analyzed using descriptive statistics and responses were compared between attendings and residents.

Summary of Results 124 out of 278 PPs completed the survey with 70% assessing ST as part of their practice and 92% promoting limiting ST. However, only 35% assess ST in patients of all ages and 16% report not starting to assess ST until children are older than 2 years old. Only 20% assess online citizenship, 28% access to screen devices, 45% house rules for ST use and 10% parental ST use. Just 40% discuss health consequences of excessive ST use. Most PPs agreed that they have a role in limiting ST use (95%) and that patients are more likely to decrease ST use if counseled by a PP (76%); however, only 46% felt they are effective in counseling patients on ST use, with attendings more confident than residents.
than residents (p = 0.0066). Less than half of residents (47%) felt they received appropriate training about ST management. The top barriers cited by PPs were time constraints, interest in changing behavior, and difficulty in affecting behavior change.

Conclusions While most PPs incorporate assessment of ST in their routine practice, many do not assess specific risk factors for excessive screen use and the majority did not feel effective at reducing ST in their patients. PPs cited time, interest, and changing parental behavior as barriers that could be targeted as areas for improvement. With many residents reporting training as a factor, improving residency training may improve efficacy.

Neurology and neurobiology
2:45 PM
Friday, February 26, 2021
87 TRANSCRANIAL DOPPLER FLOW ASSESSMENT FOR EARLY PREDICTION OF BRAIN INJURY IN ASPHYXIATED NEONATES RECEIVING THERAPEUTIC HYPOThERMIA
R Lavu*, P Maertens, M Zayek, R Bhat. University of South Alabama, Mobile, AL
10.1136/jim-2021-SRMC.87

Purpose of Study Early after birth, compensatory cerebral vasodilation and consequent increase in cerebral blood flow to increase cerebral tissue oxygenation prevail in neonates with encephalopathy due to perinatal asphyxia. Hence, neurosonographic Doppler indices to measure cerebrovascular hemodynamics may allow early prediction of adverse neurological outcomes.

Methods Used In this retrospective, single-center, observational case-control study, neonates born at ≥ 34 weeks’ gestation with a birth weight of > 2000 g, born between January 2012 and December 2019 and received therapeutic hypothermia for neonatal hypoxic-ischemic encephalopathy were evaluated for the study inclusion. As per the center’s protocol, transcranial duplex neurosonographic evaluations were performed after the initiation of hypothermia. The transcranial Doppler indices (resistive index, pulsatility index, and peak systolic velocity) of the middle cerebral artery (MCA) and the anterior cerebral (ACA) artery were obtained through the temporal acoustic window. The adverse outcome was defined as death before hospital discharge or abnormal brain magnetic resonance images during the first postnatal week. The predictive ability of Doppler indices of intracranial vessels to predict adverse outcome was assessed using receiver operating characteristic (ROC) curves.

Summary of Results Out of 70 infants with median (IQR) gestational age and birth weight of 38 (37, 39) weeks and 3223 (2830, 3500) g, respectively, a total of 28 (40%) infants developed adverse outcome. The MCA resistive index at an optimal cut-off value of <0.70 was the best performing Doppler index with an area under ROC curve (95% CI) of 0.68 (0.54–0.82). The predictive accuracy at the optimal cut-off value, as measured by sensitivity, specificity, positive predictive, and negative predictive value with 95% CI, were 57% (37% - 75%), 79% (63% - 90%), 64% (42% - 82%) and 73% (58% - 85%), respectively.

Conclusions MCA resistive index may serve as a cerebrovascular hemodynamic index for early adverse risk stratification in neonates with HIE treated with hypothermia. If MCA resistive index is used in conjunction with other known clinical-biochemical early biomarkers of brain injury, predictive accuracy may further improve.

88 SOMATIC MOSACISM OF A SINGLE PLATELET DERIVED GROWTH FACTOR RECEPTOR BETA VARIANT: THE ROLE OF ALLELE FREQUENCY ON PHENOTYPE
F El-Ghazali*, M Ferreira. University of Washington, Sammamish, WA
10.1136/jim-2021-SRMC.88

Purpose of Study Aneurysmal dilatations weaken arterial walls and put them at risk for catastrophic rupture. Germline variants and environmental contributions account for a minority of aneurysms and little is known about the role of somatic events in pathogenesis. Recently, our group described an index patient with a somatic mosaicism pattern of a unique vascular and cutaneous phenotype. Whole exome sequencing of affected vascular tissue revealed an activating somatic variant in platelet derived growth factor beta (PDGFRB) with allele fractions between 2–40%. This variant was absent from matched blood DNA and unaffected tissues from throughout the body. Ten years later, the patient suffered a deadly subarachnoid hemorrhage and the family elected scientific donation. We aimed to study the PDGFRB allele fraction to histopathologic phenotype relationship throughout the patient’s body.

Methods Used The institutional review board at the University of Washington approved all research conducted. Postmortem tissue specimens along with cell lines were harvested and mirrored tissue specimens were processed for both DNA extraction and histology. A unique digital droplet polymerase chain reaction (ddPCR) assay specific for the PDGFRB variant (p. Tyr562Cys [g.149505130T>C (GRCh37/hg19)] was developed to study allele fractions at a 20,000x depth coverage. Obtained allele frequencies were compared to the pathogenic phenotype.

Summary of Results The patient developed intracranial, radial and coronary artery aneurysms ipsilateral to the cutaneous phenotype. There was no aortic involvement and contralateral vasculature was normal. ddPCR revealed the presence of variant gradient in all affected tissue. Interestingly, the aorta and unaffected arteries did not harbor the variant. We will discuss the allele frequency relationship to phenotype throughout the patient’s vascular tree and tissues.

Conclusions The PDGFRB variants are associated with both cerebral and coronary aneurysms. The aorta was spared without evidence of aneurysmal changes. This is in contrast to inheritable connective-tissue diseases such as Ehlers-Danlos (vascular type) syndrome and Loey-Dietz syndrome, where an aortic phenotype is uniform. This is the first described case of a PDGFRB variant - gradient map showcasing somatic mosaicism with a vascular phenotype.
Purpose of Study Magnetic resonance imaging (MRI) of brain tumor is comprised of 14 series of pulsed sequences and each of them needs to be interpreted. Our novel approach fuses meaningful signal characteristics of brain pathology on a limited series of MRI images. In particular, we aim to diminish the impact of nonmaterial biophysical signal changes while improving the conspicuity of true tumor progression to improve its prognostic and diagnostic characterization.

Methods Used HIPPA-compliant, IRB-approved retrospective posthoc analysis of 45 patients with different biopsy-proven glioma grades were analyzed. Anatomical and functional MRI sequences including fluid-attenuated inversion recovery (FLAIR), T1-weighted without contrast (T1), and T1 after gadolinium administration (T1+C) were analyzed using in-house algorithms. First, the resizing and pre-processing of the volumes were performed. Then, pixel-by-pixel subtraction of T1 from T1+C images was processed to obtain the true enhancement of the intracranial tumor. The T1 subtraction volume (T1 S) markedly diminished the conspicuity of hydrated calcium, subacute blood, cortical necrosis, fat, while improving the conspicuity of capillary leakage. Due to the loss of anatomical details on the T1 S volume, an adaptive MRI fusion algorithm was used to co-register FLAIR signal intensity on the same-pulsed sequence.

Summary of Results The resulting fused volume (FUSEDFT) is a novel approach for tumor quantification in which gad-contrasted tumor elements (from T1S) were superimposed on co-registered FLAIR sequences. Thus, the co-localization of true gad contrast with FLAIR hyperintensity can be ascertained for the entire tumor volume. The FUSEDFT volume of patients with various primary brain tumors was calculated before surgical biopsy, after surgical biopsy, and following treatments. Tumor segmentation with respect to surgical cavity, FLAIR with various primary brain tumors was calculated before surgical, and oncological treatments.

Conclusions FUSEDFT images appear to be a powerful tool for evaluating the progression of low- and high-grade gliomas following various pharmacologic, biologic, radiation-induced, surgical, and oncological treatments.

Purpose of Study Methadone (MTD) is the cornerstone of medication treatment for opioid use disorder (OUD) during pregnancy. Recent studies support the impairment of myelination in the fetal rat brain after antenatal exposure to MTD. The purpose of this study was to investigate the effects of MTD exposure on oligodendrocyte (OL) development in brain of neonatal rats.

Methods Used 6 pregnant Sprague Dawley rat dams were randomized to MTD (0.2 ml/L) or untreated drinking water from embryonic day 7. Treatment group pups continued to receive MTD via maternal milk through postnatal day 7. Pups were then terminated, and coronal sections were harvested from 3 randomly selected pups of each group for immunohistochemistry. The corpus callosum (CC), lateral-CC, and external capsule (EC) were analyzed using ImageJ to quantify myelination (MBP+ fractional area), proliferation rate (fraction of Ki67+-labeled oligodendrocyte precursor cells (OPCs)), apoptosis (density of cleaved caspase 3+ (CC3+) cells co-stained with Pdgfra+, CC1+, or MBP+), and neuroinflammatory status (GFAP+ fractional area; Iba1+ cell density). Comparisons were conducted using student t-test with a significance level p<0.05.

Summary of Results Myelination was significantly decreased in CC, lateral-CC, and EC of the treatment group. The density of OPCs (Olig2+/Pdgfra+) was significantly increased in CC without significant changes in proliferation or apoptosis. Mature OL density (Olig2+/CC1+) was increased in lateral-CC, but apoptotic ratio was exacerbated in lateral-CC and EC. The apoptosis ratios of myelinating cells (MBP+) were significantly increased in CC, lateral-CC, and EC. Differences in astrocytic activation (GFAP+) were not observed, but microglia (Iba1+) appeared activated.

Conclusions Our results demonstrate the maturation arrest of OLs in rat pups after antenatal exposure to maternal MTD. This arrest is accompanied by regional microglial activation and accelerated apoptosis of both differentiated and myelinating OLs in different brain white matter regions, suggesting an association between myelin impairment and antenatal opioid exposure.
Benzodiazepine-Responsive Catatonia and Delirium in Two Patients with COVID-19

VR Jaber*, M Soliman, JB Campo, EC Mader. Louisiana State University Health Sciences Center, New Orleans, LA

10.1136/jim-2021-SRMC.92

Introduction

About 2/5 of patients with COVID-19 manifest neurological signs and symptoms at the onset of disease, 3/5 at the time of hospitalization, and 4/5 at any time during the course of the disease. Well-recognized neurological manifestations of COVID-19 include delirium and other encephalopathic signs – but not catatonia. We report two patients with COVID-19 who fulfilled the DSM-5 diagnostic criteria for delirium and catatonia.

Case Report

Patient-1 is a 39-year-old male with no history of catatonia or psychiatric disorder and Patient-2 is a 56-year-old female with schizoaffective disorder but no history of catatonia. Both patients presented with delirium, both were admitted to the ICU, and both tested positive for SARS-CoV-2. The neurological examination showed impaired attention and concentration, negativism, muscle rigidity, posturing, and waxy flexibility in both patients. EEG showed evidence of mild encephalopathy in Patient-1 and moderate encephalopathy in Patient-2. Brain MRI was unremarkable in both patients. CSF flexibility in both patients. EEG showed evidence of mild encephalopathy in Patient-1 and moderate encephalopathy in Patient-2. Brain MRI was unremarkable in both patients. CSF studies were normal in both patients. In both patients, catatonia and delirium resolved completely with intravenous lorazepam.

Conclusion

If not immediately recognized and treated, catatonia and delirium can lead to significant morbidity or mortality. Unfortunately, catatonia is easily overlooked, especially in patients with delirium. The core motor circuits of the frontal lobe and basal ganglia are the most likely sites of dysfunction in catatonia, but the locus of dysfunction can also be in the circuits of the thalamus, parietal lobe, cerebellum, and limbic cortex. SARS-CoV-2 may have precipitated catatonia by immune-mediated injury or direct invasion of the basal ganglia of Patient-1 and the parietal cortex of Patient-2. The efficacy of benzodiazepines in aborting catatonia and mixed delirium-catatonia syndromes suggests a key pathogenetic role of abnormal GABA neurotransmission in these brain disorders.

Perinatal medicine

2:45 PM

Friday, February 26, 2021

93

VARIANTS OF HUMAN TRANSCRIPTION FACTOR GENES IN MYELOMENINGOCELE OF MEXICAN AMERICAN AND EUROPEAN AMERICAN POPULATIONS

LS Youmans*, P Hillman, LS Hebert, ME Corkins, R Miller, H Northrup, K Au. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Houston, TX

10.1136/jim-2021-SRMC.93

Purpose of Study

Identify transcription factor genes with high mutational burdens in individuals of Mexican American and European American populations affected by myelomeningocele. Develop Xenopus (frog) embryo models to reveal the role of identified transcription factors with high mutational burdens in neural tube closure.

Methods Used

We created a Python tool to analyze novel and rare deleterious variants present in transcription factor genes from the exomes of 511 patients with myelomeningoceles. Approximately, half are Mexican Americans and the other half are European Americans. Population control variants were extracted from the Genome Aggregation Database. Variants having a Combined Annotation Dependent Depletion score ≥20 were defined as deleterious. Fisher exact was used to test mutational burden of deleterious variants per transcription factor gene. Knockdowns of transcription factor genes with a high significance have been tested in the Xenopus embryo model.

Summary of Results

We tested 1,639 known human transcription factor genes and found one common gene of significance, ZNF592, in both Mexican American and European American myelomeningocele groups. An additional 36 genes were found to have a possible significant effect in the Mexican American group and 34 genes in the European American group (p < 0.05). Some of these genes are associated with human and mouse diseases affecting the central nervous system. We used morpholinos to knockdown Znf592 in Xeno9inus embryos. Preliminary results indicated that Znf592 morpholinos did not result in gross abnormality of neural tube formation or a delay of the neurulation process.

Conclusions

High mutational burdens in 71 genes were associated with myelomeningocele in Mexican American and European American. Interestingly, ZNF592 is associated with both ethnicities. Although Znf592 knockdown did not result in significant gross abnormality in the Xenopus embryo, it may play an important role in neural tube formation. Studies to assess the efficiency of Znf592 knockdown using this morpholino are underway. Additionally, we are planning to knockdown Axl1 and Arnt in Xenopus embryos which showed neural tube defect phenotype in mouse models.

Abstract 91 Table 1  Comparison of 24 hour urine catecholamine levels with amino acid analog dosage

<table>
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New findings. Urine norepinephrine is low. After initiating droxidopa titrated to a therapeutic level, repeat urine catecholamine shows the elevation of norepinephrine a month after initiation (table 1), alongside a decrease in motor tics disorder and a new interest in movies. Although copper supplementation and anti-epileptic medication is the mainstay management of the neurological sequelae of Menkes disease, the use of a synthetic amino acid analog should not be overlooked as a form of motor disorder treatment in Menkes disease, which can lead to an improvement in the quality of life. Further investigation is needed to assess the long-term risks and benefits of droxidopa in Menkes disease.
INTRANASAL INSULIN REDUCED HYPOXIA-ISCHEMIA-INDUCED SENSORMOTOR BEHAVIOURAL DYSFUNCTION AND BRAIN INJURY IN P5 RATS

CK Glendye*, JW Lee, E White, N Dankhara, S Lu, N Ojeda, Y Pang, AL Bhatt, LF Fan.
University of Mississippi Medical Center, Jackson, MS

10.1136/jim-2021-SRMC.94

Purpose of Study
Because only supportive therapy is available for premature infants <36 weeks of gestation with hypoxic-ischemic (HI) encephalopathy, there is an urgent need for therapies to improve their outcomes. Intranasal administration of insulin (InInsulin) provides neuroprotection against HI-induced brain injury in postnatal day 10 (P10) neonatal rats. The current study’s objective is to examine whether InInsulin provides protection against brain injury and sensorimotor behavioral dysfunction following HI in P5 rats, which corresponds to the brain development stage of premature Infants.

Methods Used
At P5, Sprague-Dawley rat pups were randomly divided into groups: Sham+Vehicle, Sham+Insulin, HI+Vehicle, and HI+Insulin. The male and female ratio was kept equal. Pups had HI by permanent ligation of the right carotid artery followed by 90 min of hypoxia exposure or Sham surgery followed by room air exposure; immediately after, were given Insulin (25 μg) or vehicle (2.5 μl) in each nare. Sensorimotor neurobehavioral tests and brain injury evaluation by stereology technique following Nissl staining were performed on P6 in a double-blind manner. Statistical analysis was performed via two-way ANOVA followed by the Student-Newman-Keuls method. The sample size was estimated using power analysis to obtain a difference of 30% between means with a power of 85% and a significance of p < 0.05.

Summary of Results
ELISA results demonstrated measurable insulin levels in the brain’s different regions following 15 min after InInsulin administration (p<0.05). InInsulin did not cause hypoglycemia after HI. InInsulin provided the protective effects against HI-induced brain damage measured at P6. InInsulin also attenuated HI-induced sensorimotor neurobehavioral disturbances in righting reflex, negative geotaxis, hind-limb suspension test, and wire-hanging maneuver test at P6 (p<0.05); (n = 4/sex/group/all results).

Conclusions
The intranasal route effectively delivers human insulin to the brain in P5 rats. InInsulin reduced HI-induced brain damage and short-term sensorimotor behavioral disturbances in P5 neonatal rats. Our preliminary results indicate prospects for InInsulin as a novel and only therapeutic option against neonatal HI in premature infants.

WNT AND GROWTH FACTOR RNA EXPRESSION IN THE UMBILICAL CORD OF MYELOMENINGOCELE AFFECTED PREGNANCIES

KM Kuehn*, LS Hebert, RP Papanna, UK Mann, H Northrup, KA Au. University of Texas Health Science Center Houston-McGovern Medical School, Houston, TX

10.1136/jim-2021-SRMC.95

Purpose of Study
Disturbed neural tube closure results in defects ranging from lethal anencephaly to survivable forms of spina bifida (SB). Myelomeningocele (MM) is the most common form of SB and results in lifelong motor and sensory defects. Research efforts have pointed towards a multifactorial cause with a strong genetic influence. While animal and epidemiologic studies have supported this theory, human studies have been difficult to conduct. Our study aimed to look at differences in expressed genes between the umbilical cord (UC) samples of pregnancies affected by MM compared to controls in order to apply current knowledge to a human model.

Methods Used
UC samples were obtained from three MM affected and five control pregnancies. RNA was extracted and sequenced. Results were filtered to include genes with a false discovery rate <0.05 and at least a 4-fold difference in expression. A gene ontology analysis was performed on the differentially expressed genes to determine functional significance. Ten genes of interest were identified to verify the level of expression by qPCR.

Summary of Results
Overall, 3,748 genes passed the selection criteria. Of these, 49 were involved in WNT signaling or growth factor signaling. Genes involved in both WNT signaling and insulin like growth factor pathways trended towards up-regulation, while those genes involved in other growth factor signaling tended to be downregulated. Upon sub-analysis of the genes involved in WNT signaling, those involved in the canonical pathway had the greatest degree of up-regulation, followed by those involved in the non-canonical pathway.

Conclusions
Neural tube closure has long been suspected to be reliant on an intricate interaction of multiple genes to proceed correctly. The WNT signaling pathway and growth factor pathways have been implicated in this process. However, much of this information has arisen from either animal or epidemiological based studies. Our study contributes to the understanding of the role these genes play in neural tube defects by showing derangement in expression of mRNAs between the pregnancies affected by MM and controls.

PULMONARY MICROBIAL DYSBIOSIS LEADS TO REDOX IMBALANCE THROUGH THE NRF2 PATHWAY IN NEONATAL MURINE MODELS

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1University of Alabama at Birmingham, Birmingham, AL; 2University of South Alabama, Mobile, AL; 3University of Oklahoma, Oklahoma City, OK

10.1136/jim-2021-SRMC.96

Purpose of Study
Distinct airway microbial dysbiosis is seen in infants with severe bronchopulmonary dysplasia (BPD). In addition to dysbiosis, oxidative stress has been shown to exacerbate BPD, and upregulation of nuclear factor erythroid 2-related factor 2 (Nrf2)-dependent antioxidants are protective. Previous studies revealed protected lung structure and function in germ free (GF) mice. In order to understand the protective mechanisms in GF mice, we analyzed Nrf2 dependent genes in lung tissue harvested at P3, P6, and P9. Phosphate buffered saline (PBS) treated GF mice as well as non-germ free mice (NGF) were used as controls. All groups were exposed to normoxia (21% FiO2) or hyperoxia (85% FiO2). The expression of Hmox1 and Nqo1 in lung tissue harvested at P14 was measured by qPCR.
C57BL/6 mice with an Nrf2 knockout were colonized through intranasal inoculation with PBS, *E. coli*, respiratory probiotic, or *E. coli* followed by respiratory probiotic on P3, P6, and P9. All groups were exposed to normoxia (21% FiO₂) or hyperoxia (85% FiO₂). On P14, pulmonary function tests were performed.

**Summary of Results** GF mice colonized with *E. coli* showed a significant increase in Hmox1 and Nqo1 expression independent of hyperoxia exposure. In an Nrf2 knockout model, treatment with *E. coli* resulted in worsening pulmonary function in both normoxia and hyperoxia (high resistance P<0.001, low compliance). Treatment with a respiratory probiotic resulted in improvement in pulmonary function even in hyperoxic conditions (decreased resistance P<0.05, increased compliance).

**Conclusions** Our results suggest the presence of an interaction between airway microbiome and Nrf2-dependent antioxidant responses in the lung. Through these studies, we hope to lay the foundation for microbiome related therapeutics development.

**Purpose of Study** Hospital-based nutritional interventions should optimize not only quantitative outcomes of growth (i.e., weight gain) but also qualitative outcomes of growth (i.e., body composition). Higher than usual protein intake could increase weight gain, increase fat-free mass (FFM), and decrease fat mass (FM) in extremely preterm infants. We hypothesized that higher protein intake compared to usual protein intake increases FFM and reduces percent body fat (% BF) in extremely preterm infants fed human milk.

**Methods Used** This was a single-center, masked, randomized trial in which human milk-fed infants with gestational ages 25 weeks 0 days through 28 weeks 6 days were randomly assigned in a 1:1 allocation ratio to either standard protein supplementation (control group) or high protein supplementation (intervention group) after reaching full enteral feeding. To increase the protein content of human milk in the intervention group, we added a fixed amount of commercially available hydrolyzed bovine protein to fortified human milk (0.8 g per each 100 ml). The study intervention began after human milk fortification was ordered and continued for a minimum of 21 days.

**Summary of Results** Fifty-six infants were randomized. The median gestational age at birth was 27 weeks (IQR: 26–28 weeks). Baseline characteristics did not differ between groups. All study participants received either mother’s milk or donor milk. The outcome of % BF at term corrected age or discharge (whichever occurred first) differed between groups (mean difference favoring the high protein supplementation group: +2; 95% CI: 1 to 4; p <0.05). At term corrected age or discharge, FFM Z-scores (-0.9 vs. -1.5; p=0.04) and FM Z-scores (3.1 vs. 2.1; p=0.05) were higher in the intervention group. Weight-Z scores at term corrected age or discharge were also higher in the intervention group (-0.4 vs. -1.2; p<0.05). The secondary outcomes of % BF Z-scores (2.7 vs. 2.3; p=0.21), postnatal growth restriction (19% vs. 32%; p=0.32), and weight gain at term corrected age or discharge (14 vs. 13; p=0.56) did not differ between groups.

**Conclusions** Human milk diets with higher protein content increase weight, FFM, and FM Z-scores at term corrected age in extremely preterm infants.

### Abstract 98 Table 1

<table>
<thead>
<tr>
<th></th>
<th>LRP</th>
<th>BPDnTX</th>
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<tbody>
<tr>
<td>BW</td>
<td>1139 (409)</td>
<td>813 (161)</td>
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<tr>
<td>GA</td>
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<tr>
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<td>24.8 (3.4)</td>
<td>30.5 (3.4)</td>
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<td>11.2 (1.3)</td>
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<tr>
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<td>0.49 (0.07)</td>
<td>0.55 (0.07)</td>
</tr>
<tr>
<td>LF/HF</td>
<td>1.46 (0.12)</td>
<td>1.57 (0.12)</td>
</tr>
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</table>

*p-statistically significant (mean ± std dev)*

**Purpose of Study** This study will describe heart rate variability (HRV) during feeding in infants with bronchopulmonary dysplasia (BPD) and determine if a speech therapy intervention can correct autonomic dysfunction.

**Methods Used** ECGs were collected during bottle feeding for 25 Low-Risk Preterm (LRP) infants and babies with BPD who were randomized (25 each) to receive a speech therapy intervention (BPDwTX) or standard care (BPDnTX). Heart rate (HR), mean RR interval (RR), standard deviation of consecutive RR intervals (SDDR), and standard deviation of the difference between consecutive RR intervals (SDDRR) were calculated for each. ECGs were converted to power spectra to measure low frequency (LF) and high frequency (HF) power. Independent variables were gestational age (GA), birthweight (BW), postmenstrual age (PMA), weeks before first oral feed (WBFN) and weeks post first oral feed (WPFN). Generalized estimating equations were fit to describe each group.

**Summary of Results** LRP infants had larger BW and GA. BPD infants had greater WBFN. There were no associations for HR, RR, LF, HF or LF/HF. SDDR is larger in the BPD groups. SDDR increases with GA. There were no differences for SDDRR among groups. SDDR and SDDRR were correlated. In almost all cases, the results in BPDwTX were closer to the LRP than BPDnTX.

**Conclusions** SDDR is increased in BPD. The balanced increase in SDDR and SDDRR suggests that altered respiration in BPD impinges on suck-swallow-breath integration and causes stress during feeding. Our speech therapy intervention may have had a small but irrelevant effect on the stress experienced by the infants during feeding.
METABOLOMICS OF ASTHMA: A SYSTEMATIC REVIEW

Z Cheema*, SB Mustafa, D Moses, M Evans, A Moreira. The University of Texas Health Science Center at San Antonio, San Antonio, TX

10.1136/jim-2021-SRMC.99

Purpose of Study Assess metabolomic changes in asthmatic patients.

Methods Used Five databases were searched to identify studies evaluating metabolomic changes in childhood-onset asthma. Studies that utilized metabolomic profiling via chromatography, mass spectrometry, or magnetic resonance were included. Citation titles and abstracts from literature search and review articles were uploaded to Rayyan. Three investigators independently reviewed and selected studies meeting inclusion criteria. Study characteristics included patient demographics, sample types, method of analysis, and significant metabolite changes. Metabolites were categorized to pathways using MetScape. Semiquantitative analysis via vote counting was used to identify common pathway changes among asthmatic patients.

Summary of Results Thirty-one studies were identified (n=5742 patients), with individuals ranging from 1–77 years of age. The majority of studies examined exhaled breath condensate (EBC, n=17 studies) via untargeted analysis followed by serum (n=7 studies), urine (n=6 studies), and stool (n=1 study). Four-hundred metabolites were identified and categorized into 18 pathways. The most common pathways were lipid/fatty acid metabolism, amino acid metabolism, and inflammation, all of which were elevated in asthmatic patients. Upregulation of lipid/fatty acid metabolism was reflected in all tissue sources, except stool. Amino acid metabolism was increased in urine and serum samples but downregulated in EBC and stool specimens. The inflammatory pathway had the most significant upregulation in EBC.

Conclusions Metabolomic profiling may lead to a better understanding of the underlying mechanisms associated with asthma. Herein, we demonstrate that lipid/fatty acid metabolism, amino acid metabolism, and inflammation are key features in asthmatics. Validation of these findings may aid in asthma diagnosis or monitoring of therapeutic management. Future studies should focus on determining the optimal tissue source for greatest accuracy in metabolomic analysis in asthmatic patients.

COVID-19 AND BLOOD TYPE IN ATLANTA

1M Kaalia*, 1V Sueblinvong, 2A Mehta. 1Emory University, Atlanta, GA; 2Mercer University, Macon, GA; 3Atlanta VA Medical Center, Decatur, GA

10.1136/jim-2021-SRMC.100

Purpose of Study The purpose of this study was to determine if there are any associations with severity of illness from COVID-19 and ABO blood group among a cohort of critically ill patients across the Emory Healthcare System. Since COVID-19 was first identified, there have been some reports of an association between blood type A and a higher risk of infection and mortality, while other groups have determined that no such association exists. We sought to determine if ABO blood group was associated with higher rates of intubation, mortality, or inflammatory markers at our institution.

Methods Used We reviewed data from the electronic medical record of all patients who were admitted to the hospital with COVID-19 at any of the Emory Hospitals between March 6, 2020 and May 5, 2020. The data were collected by the Emory COVID-19 Quality and Clinical Research Collaborative, and we analyzed data from patients who had info for blood group and spent any time in the intensive care unit during their hospitalization. We used the Chi-square test to determine if death or intubation were associated with blood group and ANOVA when comparing inflammatory markers between the blood groups.

Summary of Results A total of 192 patients had data available for blood type, and among them 47 patients had blood group A (24.5% vs 42.0% nationally), 48 had blood group B (25.0% vs 10.0% nationally), 9 had blood group AB (4.7% vs 4% nationally), and 88 had blood group O (45.8% vs 44.0% nationally). Overall death rate (30.2%) and intubation rate (77.1%) were not associated with any blood group type (p=0.424 and p=0.144, respectively). Values for inflammatory markers (CRP, IL-6, D-dimer, WBC, and ferritin) were not significantly different between the different blood groups (p=0.654, p=0.357, p=0.060, p=0.083, and p=0.706, respectively).

Conclusions When compared to data from the American Red Cross, blood group B was more prevalent and blood group A was less prevalent in our cohort compared to the general population of the US. There was no association between blood group type and death or mechanical ventilation. We noted a trend towards higher D-dimer levels and WBC counts in patients with blood group B, but overall, there were no significant differences between inflammatory markers and blood group types among critically ill patients with COVID-19.

COVID-19 AND OBESITY IN ATLANTA

1WA Neveu*, 1V Sueblinvong, 2A Mehta. 1Emory University, Atlanta, GA; 2Atlanta VA Medical Center, Decatur, GA

10.1136/jim-2021-SRMC.101

Purpose of Study Obesity is a complex disease that exhibits alteration in immune function. As the body mass index (BMI) increases, the visceral adipocytes have been found to secrete higher levels of pro-inflammatory cytokines, which contribute to alterations in coagulation signaling. These findings raise concerns that obesity-mediated inflammation may be responsible for the observed findings of higher risk of severity from SARS-CoV-2. This study examines the effect of obesity on levels of inflammatory markers and severity of illness from COVID-19 in a cohort of critically ill patients.

Methods Used Data were collected from the electronic medical record by the Emory COVID-19 Quality and Clinical Research Collaborative. We analyzed data of patients admitted with COVID-19 within the Emory Healthcare System between March 6, 2020 and May 5, 2020 who spent time in the ICU during their hospitalization. We used the Chi-
ALCOHOL IMPAIRS ALVEOLAR MACROPHAGES RESPONSES TO MYCOBACTERIUM TUBERCULOSIS

L Sayegh*, M Ahmed, X Fan, SC Auld, D Guidot, BS Staitieh. Emory University School of Medicine, Atlanta, GA

Purpose of Study Chronic alcohol ingestion has been associated with increased rates of pulmonary tuberculosis and is known to impair alveolar macrophage (AM) innate immune function against bacterial pneumonia. Because the AM is an essential component of the initial immune response to Mycobacterium tuberculosis (Mtb), we hypothesized that alcohol impairs key pathways in the innate immune response to Mtb as well. We therefore performed a series of experiments to investigate the effects of chronic alcohol exposure on pathways important for the recognition, phagocytosis, and killing of Mtb.

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Summary of Results In NR8383 cells, TLR2, CD14, and TNFα gene expression in response to Mtb was blunted in cells exposed to alcohol. Rat AM expression of GM-CSF-R-β, Mannose receptor, and TLR2 were also impaired by chronic alcohol exposure. Although expression of all three proteins was enhanced by exposure to Mtb in rat AMs, alcohol blunted the response significantly relative to macrophages from control-fed littermates.

Conclusions In a rat AM cell line, alcohol exposure impaired expression of genes important to myriad aspects of the Mtb response, including recognition (TLR2), uptake (CD14), and adaptive immune activation (TNFα). Similarly, AMs from alcohol-fed rats demonstrated defects in GM-CSF-R-β, Mannose receptor, and TLR2, all of which are cell surface receptors essential for the recognition and immune response against Mtb. Further studies are needed to better detail the full extent of alcohol's effects on the Mtb response, but these data suggest that those defects occur in a variety of important cellular pathways.

BLOOD TRANSCRIPTOME ENRICHED WITH MEGAKARYOCYTE GENE SIGNATURE PREDICTS POOR OUTCOME IN IDIOPATHIC PULMONARY FIBROSIS (IPF)

S Saito*, CH Chung, N Nuradin, Y Liu, J Lasky, J Kolls. Tulane University, New Orleans, LA

Purpose of Study A recent study in mice suggested that platelet-releasing megakaryocytes reside in lung interstitium and that the lung is a site of platelet biogenesis. The presence of megakaryocytes in the lungs have also been reported in human. However, the role of megakaryocytes and platelets in idiopathic pulmonary fibrosis (IPF) is ill-defined. We sought to investigate whether megakaryocyte/platelet gene signature is altered in lung and/or blood transcriptome in IPF.

Methods Used Lung and blood transcriptome data of IPF patients and their controls in the NCBI Gene Expression Omnibus (GEO) repository were analyzed (GSE47460, GSE93606). Enrichment of megakaryocytes and platelets in IPF and the control were estimated using xCell, a novel computational method that assesses enrichment of individual cell types based on gene expression profile. We first compared enrichment scores for each cell type in IPF and the control, using t-test or Kruskal-Wallis test. With regard to blood transcriptome of IPF patients, we also compared the disease progression-free survival (i.e., survival without significant [>10%] decline in forced lung capacity [FVC]) over 6 months, between patients with high megakaryocyte enrichment score and patients with low megakaryocyte enrichment score, using log-rank test. A p-value <0.05 was considered statistically significant.

Summary of Results In the lung transcriptome data, a megakaryocyte gene signature was less enriched in IPF than in the control group. On the other hand, in the blood transcriptome data, a megakaryocyte gene signature was more enriched in IPF than in the control group. Moreover, IPF patients with higher megakaryocyte score (above median) in blood transcriptome had worse disease progression-free survival than IPF patients with lower megakaryocyte score (below median) (log rank test p=0.0096). There was no significant difference in platelet enrichment scores between IPF and the control group in lung or blood.

Conclusions In IPF, a megakaryocyte gene signature is altered in the lung and blood transcriptome. Moreover, blood transcriptome enriched with the megakaryocyte gene signature predicts poor outcome in IPF. These data suggest that a megakaryocyte gene signature in peripheral blood may be a novel biomarker in IPF.
USE OF ORAL ANTI-DIABETIC DRUGS AND RISK OF HOSPITAL AND INTENSIVE CARE UNIT ADMISSION FOR INFECTIONS

J Investig Med

Purpose of Study Sepsis is one of the top causes of ICU mortality, and diabetes is a risk factor for infections. While metformin has been associated with decreased rates of sepsis, the risk of infections in diabetic patients taking newer classes of oral anti-diabetic drugs (OADs) is uncertain. The aim of our study is to examine the association between outpatient OAD use and hospital admissions for infections.

Methods Used This is a retrospective data analysis utilizing the VA Corporate Data Warehouse. We identified diabetic patients over 18 years old with diabetes who filled at least 1 OAD prescription from 2013–2017. Patients were classified as taking metformin, sulfonylureas, alpha-glucosidase inhibitors, meglitinides, thiazolidinediones, DPP4 inhibitors, or SGLT2 inhibitors at any point during the study period regardless of admission date. The endpoint was a hospital admission with an infectious condition on the admission or discharge diagnosis list. Multivariate logistic regression was used to estimate the effect of each drug class on admission while adjusting for covariates.

Summary of Results The cohort included 1.39 million patients with diabetes who were 95.8% male, 72.2% White, 20.3% smokers, and had a mean age of 70.5 years. Of those admitted to a hospital for infection, 7.5% required ICU level of care. After adjusting for covariates, those who took metformin during the study period had 3.3% lower odds of hospital admission for infection compared to those who were never on metformin (OR 0.97, 95% CI 0.95–0.98). OADs that were associated with a statistically significant increased odds of being admitted included meglitinides (OR 1.22, 95% CI 1.07–1.38), SGLT2 inhibitors (OR 1.16, 95% CI 1.08–1.24), alpha-glucosidase inhibitors (OR 1.09, 95% CI 1.04–1.15), and DPP4 inhibitors (OR 1.04, 95% CI 1.01–1.06).

Conclusions Metformin was associated with lower odds of admission for infection while meglitinides, SGLT2 inhibitors, alpha-glucosidase inhibitors, and DPP4 inhibitors were associated with higher odds of admission. The effect size for most OADs was small with likely limited clinical relevance to individual patients. However, as OADs are widely prescribed, there could be implications at a population level.

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Renal, electrolyte and hypertension

4:30 PM

Friday, February 26, 2021

TUMOR NECROSIS FACTOR-ALPHA TYPE-1 RECEPTOR PROTEIN DECREASES IN RENAL CORTEX, NOT IN MEDULLA DURING HIGH SALT INTAKE IN NITRIC OXIDE DEFICIENT MICE

DA Majid*, C Ouji, S Talwar, A Abdel-Mageed, A Castillo. Tulane University School of Medicine, New Orleans, LA

Purpose of Study Tumor necrosis factor-alpha (TNFα) is a pro-inflammatory cytokine that is involved in renal injury associated with salt-sensitive hypertension (SSH). In the kidney, TNFα receptor type 1 (TNFR1) activation induces natriuresis, suggesting its’ counter-regulatory role in SSH opposing salt retention. We hypothesize that TNFR1 activity in the kidney is reduced in nitric oxide (NO) deficient condition to induce SSH.

Methods Used Experiments were performed in intact (C57BL6 strain) and in 2 models of NO deficient mice: a) chronically treated with NO synthase inhibitor, nitro-L-arginine methyl ester (L-NAME; 0.05 mg/min/g by osmotic mini-pump), b) eNOS knockout (KO) mice, which were given normal (NS; 0.4% NaCl) or HS (4% NaCl) diet for 4 weeks (n=6–7 in each group). Systemic blood pressure (SBP) was measured using tail-cuff plethysmography. The kidneys were isolated and processed for tissue analysis at the end of the experiment. The TNFR1 protein in renal (cortical and medullary) tissues was analyzed using the Western blot technique using appropriate TNFR1 and GAPDH antibodies. The blot image was quantified with Image J software.

Summary of Results HS intake alone did not alter SBP in intact mice (NS, 76 ±2.1 vs HS, 78 ±1.4 mmHg) but increased in L-NAME treated (104 ±2.8 mmHg) and in eNOSKO mice (107±3.6 mmHg). The quantitative immunoblot analysis showed that TNFR1 protein level (band intensity density units) was lower in renal cortical (44±9 vs 111±30 units; P<0.05) but not in medullary tissues (114±16 vs 128±97 units; P=ns) in L-NAME treated mice compared to control mice with HS intake. The intensity of TNFR1 immunoblot was also significantly lower in cortical (24 ± 5 units; P<0.05) but not in medullary tissues (74 ±21 units; P=ns) of eNOSKO mice compared to control mice.

Conclusions These data indicate that TNFR1 activity is down-regulated in renal cortex during HS intake in NO deficient condition. Such downregulation of TNFR1 activity would facilitate sodium retention by the renal cortical tubules leading to develop SSH in NO deficient conditions.

INCREASED GLOMERULAR CAPILLARY WALL STRAIN PRECEDES GLOMERULOPATHY IN THE DIABETIC RAT

Purpose of Study Mechanical strain deleteriously affects glomerular cells, causing podocyte hypertrophy and increased deposition of extracellular matrix proteins by mesangial cells. Since these behaviors are concomitant with glomerular hypertension and hyperfiltration in diabetic glomerulopathy, we hypothesized that glomerular capillary wall strain plays a role in the cause and/or progression of glomerulosclerosis in diabetics. However, the magnitudes of glomerular capillary wall strain in diabetic and healthy conditions have yet to be rigorously quantified.

Methods Used We developed an anatomically accurate mathematical model of blood flow and filtration in a compliant rat glomerular capillary network that estimates the change in glomerular capillary diameter as a function of intraglomerular pressure. We used data from a previous study (Cortes, Pedro, et al. Kidney international 51.1 (1997): 57–68) to estimate...
PROXIMAL TUBULE-SPECIFIC DELETION OF SIRTUIN 3 IN THE KIDNEY MITOCHONDRIAL PROTEIN SIRTUIN 3 ATTENUATES ANGIOTENSIN II-INDUCED HYPERTENSION AND AUGMENTS NATRIURETIC RESPONSES IN FEMALE MICE

AO Leite*, XC Li, JL Zhuo. Tulane University School of Medicine, New Orleans, LA

Purpose of Study Sirtuin 3 (SIRT3) is a mitochondrial matrix protein closely involved in energy production and oxidative stress responses in hypertension and kidney diseases. The present study determined the role of SIRT3 in the development of ANG II-induced hypertension using female mice with proximal tubule-specific knockout of SIRT3 (PT-SIRT3−/−).

Methods Used Adult female wild-type C57BL/6j mice and PT-SIRT3−/− mice (n=6 per group) were infused with or without a slow pressor dose of ANG II via an osmotic minipump (0.5 mg/kg/day, i.p.), supplemented with 2% NaCl diet, to slowly increase blood pressure for 2 weeks. Systolic, diastolic, and mean arterial blood pressure were determined with the tail-cuff method, and 24 h urinary sodium, potassium, and chloride excretion were determined using a metabolic cage.

Summary of Results Basal systolic (SBP), diastolic (DBP), and mean arterial blood pressure (MAP) were significantly lower in adult female PT-SIRT3−/− mice than female wild-type C57BL/6j mice (WT-SBP: 112 ± 2 mmHg vs. PT-SIRT3−/−: 93 ± 2 mmHg, P < 0.01). In response to ANG II infusion and 2% high salt treatment, SBP was increased to 148 ± 6 mmHg in adult female wild-type mice (P < 0.01), but SBP was increased only to 130 ± 7 mmHg in adult female PT-SIRT3−/− mice (P < 0.01). There were no significant differences in DBP and MAP responses between female wild-type and PT-SIRT3−/− mice (n.s.). Basal heart rate was not significantly different between adult female wild-type and PT-SIRT3−/− mice (n.s.), but it was decreased to a similar extent in response to ANG II and 2% high salt treatment (n.s.). With respect to basal 24 urinary sodium, potassium, and chloride excretion, no significant differences were observed between wild-type and PT-SIRT3−/− mice (n.s.). However, ANG II and 2% salt treatment significantly augmented 24 h urinary sodium, potassium and chloride excretion in adult female PT-SIRT3−/− mice (P < 0.01), compared with female wild-type mice (P < 0.01).

Conclusions Taken together, the present study suggest that SIRT3 in the mitochondria of the proximal tubules may play an important roles in the development of ANG II-dependent hypertension in female mice.

RISK OF ACUTE KIDNEY INJURY IN COVID-19 IS INCREASED IN AFRICAN AMERICANS WITH APOL1 HIGH-RISK GENOTYPE

Purpose of Study It has been recently shown that individuals of African American (AA) ancestry who are carriers of the high-risk apolipoprotein L1 (APOL1) genotype are at risk of developing acute kidney injury (AKI) and nephrotic-range proteinuria due to collapsing glomerulopathy when they acquire COVID-19. Nonetheless, the majority of cases of AKI in AAs are due to acute tubular injury. Currently, it is not known whether high-risk APOL1 genotype confers AAs a greater overall risk for AKI due to COVID-19. We hypothesized that the overall risk for AKI is increased in AA carriers of the APOL1 high-risk genotype.

Methods Used We prospectively identify AA patients admitted at Ochsner Medical Center with a nasopharyngeal swab specimen positive PCR for SARS-CoV-2 RNA. Blood samples were retrieved within 72 hrs of collection and sent to Arkana Laboratories for genotyping for APOL1 polymorphism. Outcome measures were AKI stage ≥ 2 (by KDIGO) and persistent AKI (no resolution by 72 hours) that occurred within 21 days of the positive PCR.

Summary of Results Specimens from 104 patients were obtained and assayed. Median age was 60 (23 – 92) years, 42% were women, 67% had hypertension and 19% had existing chronic kidney disease. The incidence of high risk APOL1 genotype in the entire cohort was 15%, similar to the published prevalence of 14%. Among patients with high risk APOL1 genotype (2 alleles) (n = 16), 11 developed AKI and 5 did not. Among those without high risk APOL1 genotype (0-1 alleles) (n = 88), 32 developed AKI and 56 did not. Relative risk (RR) for AKI was 1.89 (1.23 – 2.90), p=0.004. Similarly, persistent AKI occurred in 9 of 16 patients with high risk APOL1 genotype and 17 of 88 of those without high risk APOL1 genotype; RR for persistent AKI: 2.91 (1.59–5.34), p=0.0006.

Conclusions High-risk APOL1 genotype in AAs is associated with greater risk for AKI stage ≥ 2 and persistent AKI in COVID-19. Whether the increased AKI risk is driven by a greater risk for independent glomerular insult, a tubular insult or other factor is not known and deserves further investigation. This observation may have significant public health implications.
Purpose of Study We previously demonstrated sex differences in hypertension in rats with unilateral renal artery stenosis (2K1C), with females developing a significantly lower degree of hypertension and renal injury vs. males. This study evaluates the possible role of estrogen as protective in renovascular hypertension by comparing blood pressure and renal function in intact and ovariectomized 2K1C female rats.

Methods Used We studied 4 OVX and 4 control female rats. A 0.2 mm silver clip was placed on the left renal artery of OVX rats, and blood pressures (BP) of both groups were recorded on days -1, 3, 7, 14, and 21 with a tail cuff. Rats were placed in metabolic cages for 24 hours to measure water intake and urine volume. Rats were subjected to clearance studies on day 22. Following anesthesia with pentobarbital, the jugular vein was catheterized and infused with an albumin/mulin/PAH saline solution (1.2 mL/hour). Arterial pressure was continuously measured with a femoral artery catheter. The right and left ureters were catheterized, and urine flow was collected in 30 min periods over 2 hours for uAGT ELISA and renal function analyses. Right and left kidneys were sectioned for RNA and histology to determine degree of kidney injury.

Summary of Results Preliminary findings show BP readings in OVX 2K1C rats trending higher than intact 2K1C females, with statistical difference by day 21. Importantly, OVX 2K1C rats did not show statistical difference in BP, urine volume, or urine flow versus males. OVX clipped kidneys showed reduced kidney function compared to intact 2K1C clipped kidneys, trending similar to male 2K1C data. Nonclipped kidneys of OVX rats showed significantly increased uAGT excretion versus CK, further supporting the role of intrarenal RAS in mediating hypertensive response in 2K1C animals.

Conclusions Increases in urinary angiotensinogen in OVX rats indicate augmented intrarenal AngII levels which associates closely with the decreased renal function in OVX rats vs. control and vs. intact females. This suggests that removal of estrogen eliminates its protective role against hypertension. Tissue analysis of renal injury is pending; however, these preliminary findings help explain sex-differences in hypertension and facilitate research into treatment and management of hypertension in women.

Purpose of Study Acute kidney injury (AKI) is a reported manifestation of COVID-19 (CoV-AKI). Release of inflammatory cytokines has been recognized as a characteristic feature of COVID-19 and is linked to severity of illness. However, it has not been clearly determined if levels of serum markers of inflammation are associated with risk for development of AKI or its severity.

Methods Used We conducted an observational study in patients hospitalized at Ochsner Medical Center over 1-month period with COVID-19 and diagnosis of AKI. We examined the relationship between the blood level of ferritin, C-reactive protein (CRP), procalcitonin (proCal), D-dimer and lactate dehydrogenase (LDH) and the incidence of AKI, as well as AKI requiring renal replacement therapy (AKI-RRT), by assessing comparison of means and proportions and by logistic regression analysis.

Summary of Results Among 644 patients with COVID-19, we compared 161 (26%) with AKI vs 414 (64%) without AKI. Median serum creatinine on admission was higher in the AKI group (1.8 vs 1.1 mg/dL, p<0.0001). Preexisting chronic kidney disease rates were comparable (35% vs 28%, for AKI and no AKI groups). The median value of inflammatory markers on admission were higher in the AKI group [ferritin 1016 (516–2534) vs 680 (315–1416) ng/mL, p<0.0001; CRP 163 (93–243) vs 93 (46–165) mg/L, p<0.0001; proCal 0.37 (0.2–1.6) vs 0.12 (0.06–0.32) ng/mL, p<0.0001; D-dimer 1.57 (0.96–5.14) vs 1.13 (0.68–2.57) mcg/mL, p=0.0004; and LDH 532 (365–804) vs 428 (309–548), p=0.0004]. On multivariate logistic regression analysis, CRP (p=0.003) and ferritin (p=0.033) were associated with greater risk for AKI. In addition, ferritin ≥ 1200 ng/mL and CRP ≥ 300 mg/L were independently associated with AKI [adjusted odds ratio: 2.3 (1.3–4), p=0.003, and 2.5 (1.0–6.3), p=0.05; respectively]. Furthermore, ferritin, CRP, proCal and LDH levels were significantly higher in those with AKI-RRT compared to those not requiring RRT (p=0.022 to p=0.009).

Conclusions Higher level of inflammatory markers were associated with CoV-AKI, and levels were even higher for those with CoV-AKI-RRT. In patients with COVID-19, magnitude of ferritin and CRP on admission could be used for AKI risk stratification.
ABSTRACT WITHDRAWN

ABSTRACT WITHDRAWN
WHICH GROUP OF PATIENTS WITHDRAW FROM A PULMONARY REHABILITATION PROGRAM?

B Mantilla*, MN Vinan Vega, K Nugent. Texas Tech University, Lubbock, TX

10.1136/jim-2021-SRMC.114

Purpose of Study Pulmonary rehabilitation (PR) is an evidence-based, non-pharmacological therapy for patients with COPD to improve dyspnea, exercise capacity, and health-related quality of life. Despite the clear benefits associated with PR, there is a significant dropout rate associated with worse clinical outcomes. The following study aims to investigate the profile of patients with chronic lung disease who did not complete the PR program at the University Medical Center in Lubbock, Texas.

Methods Used We retrospectively reviewed the medical records of patients who completed and dropped out from the PR program during 2014 to 2019. The adherent and non-adherent patients were compared based on age, gender, FEV1, %FEV1, 6-minute walk distance, and number of hospitalizations prior to the initiation of PR. Variables were analyzed using means ± standard deviations and percentages. Comparisons between groups were made using paired t-tests or chi-square tests with GraphPad software. P-values ≤ 0.05 were considered statistically significant.

Summary of Results Forty-eight percent of 277 patients withdrew from the pulmonary rehabilitation program. The mean number of sessions in the drop out group was 12.35 ± 14.15. More females and younger patients were in the drop out group. There were no significant differences in FEV1 and %FEV1 between the two groups. Patients who withdrew from the pulmonary rehabilitation program had a lower initial 6-minute walk distance and a higher number of hospital visits (table 1).

Conclusions Predictors of non-adherence to PR include younger age, female gender, worse exercise tolerance and more hospital visits. Program coordinators need to spend extra time with these patients in an effort to determine barriers to participation and improve completion rates.

SOUDIUM-GLUCOSE COTRANSPORTER 2 INHIBITION ATTENUATES THE INTRARENAL RENIN-ANGIOTENSIN SYSTEM IN A RAT MODEL OF POLYCYSTIC Ovary SYNDROME

1) Pruet*, 1S Everman, 2ED Torres Fernandez, 1D Romero, 1Y Yanes Cardozo. 1University of Mississippi Medical Center, Jackson, MS; 2The University of Texas at Austin, Dell Medical School, Austin, TX; 3Women’s Health Research Center, Jackson, MS

10.1136/jim-2021-SRMC.115

Purpose of Study Polycystic ovary syndrome (PCOS) is the most common endocrinopathy in women of reproductive age. PCOS is characterized by hyperandrogenemia and ovulatory dysfunction, and it is highly co-prevalent with several cardiovascular risk factors such as obesity, increased blood pressure (BP), and insulin resistance (IR). The renin-angiotensin system (RAS) appears to be dysregulated in PCOS as well. Current treatments for these cardiovascular risk factors in PCOS are lackluster. We tested the hypothesis that administration of a sodium-glucose cotransporter 2 inhibitor (SGLT2i) will attenuate the RAS in a PCOS rat model.

Methods Used Four-week old Sprague Dawley female rats were randomized to either control or dihydrotestosterone (7.5 mg/kg/day) for 3 weeks (n=7–10 per group). Adiposity was analyzed by EchoMRI. Renal cortices and medullas were collected for real time PCR for intrarenal RAS components. Angiotensin-converting enzyme (ACE) activity was measured fluorometrically, BP was measured by radiotelemetry during SGLT2i treatment.

Summary of Results PCOS rats have increased adiposity, leptin, IR, renal ACE mRNA expression, and BP. SGLT2i decreased fat mass (21.1 ± 2.7 vs 12.2 ± 0.8 g, P<0.01) and leptin (0.86 ± 0.16 vs 0.45 ± 0.05 ng/mL, P<0.05) in PCOS. SGLT2i decreased BP in PCOS. In the renal medulla of PCOS, SGLT2i decreased mRNA expression of ACE and angiotensin II type 1 receptor. Furthermore, in PCOS, SGLT2i decreased medullary ACE activity (573.0 ± 563.4 vs 370.7 ± 430.2 nmol/min/mg, P<0.01). However, plasma ACE and IR were unchanged by SGLT2i in treatment.

Conclusions SGLT2i decreases activation of the intrarenal RAS in PCOS, which was associated with decreased adiposity, leptin, and BP. This suggests that SGLT2i, through attenuation of the intrarenal RAS, could be a novel therapeutic agent for reducing BP and obesity in women with PCOS. Funded by COBRE/MS CEPR P20GM121334.

THE SUPPRESSION OF COLLAGEN INDUCED ARTHRITIS USING COLLAGEN WITH POST-TRANSLATIONAL MODIFICATIONS

HH Odens*, V Woo-Raaberry, A Kang, L Myers. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

10.1136/jim-2021-SRMC.116

Purpose of Study Rheumatoid Arthritis is an autoimmune arthritis involving degradation of cartilage, hyperplasia of the synovium, and infiltration of mononuclear cells. Collagen has...
been proposed as a potential suppressive agent for autoimmune arthritis because it can stimulate the Leukocyte-associated immunoglobulin-like receptor 1 (LAIR-1) which suppresses the activity of immune cells such as CD4+ Th1 cells. Post-translational modifications (PTM) are essential processes used by eukaryotic cells to diversify their protein functions and dynamically coordinate their signaling networks. Recently there has been a renaissance of interest in the possibility that citrullination (Cit) of proteins triggers more severe inflammation. The goal of this research was to use the collagen-induced arthritis animal model to test whether citrullination of Type I(I) collagen chains would alter its ability to suppress collagen induced arthritis (CIA).

**Methods Used** Groups of 10 DR1 mice were injected intraperitoneally with either: (1) Type I(I) collagen chains, (2) citrullinated Type I(I) collagen chains, or (3) phosphate-buffered saline (PBS). Each mouse was given four doses of 100µg each over the span of four weeks and the severity of arthritis were determined by visual examination. Each mouse was scored thrice weekly and the mean severity score was recorded at each time point.

**Summary of Results** We found that Type 1(I) significantly reduced the severity of arthritis in the DR1 mice while mice treated with cit-Time I(I) developed more severe arthritis (severity scores of 0.5 ± 1 vs 4.9 ± 6, p ≤ 0.04). The antibody responses to collagen were also studied to compare the outcomes following each treatment. Results demonstrated that mice treated with the non-cit Type I(I) collagen group had lower antibody levels to native type II collagen compared to the citrullinated Type I(I) collagen group and the PBS control group. These mice also had significantly lower antibody titers to cit type I collagen.

**Conclusions** This data suggests that type I collagen suppresses both the severity of arthritis and the antibody titers to collagen probably by stimulating LAIR-1 and that citrullination of the collagen interferes with this process.

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SSPR plenary session

9:00 AM

Saturday, February 27, 2021

[**117**] **INTRANASAL INSULIN AND SEX-SPECIFIC EFFECTS ON LONG-TERM NEUROBEHAVIORAL OUTCOMES FOLLOWING HYPOXIC-ISCHEMIC BRAIN INJURY IN NEONATAL RATS**

University of Mississippi, Jackson, MS

10.1136/jim-2021-SRMC.117

**Purpose of Study** Intranasal insulin (InInsulin) administered immediately following hypoxic-ischemic (HI) exposure improves early neurobehavioral outcomes and reduces ipsilateral brain damage in 10 days old (P10) neonatal rats. The current study’s objective was to test whether InInsulin provides long-term neuroprotection against neonatal HI-induced brain injury evaluated in juvenile rats at P21-25.

**Methods Used** At P10, Sprague-Dawley rat pups were randomly divided into four groups: Sham+Vehicle; Sham+Insulin; HI+Vehicle; and HI+Insulin; with an equal male/female ratio. Pups either had HI exposure by ligation of the right carotid artery followed by 90 min of hypoxia (8% O2) or sham surgery followed by room air exposure. Immediately after HI or Sham, pups received either InInsulin (25 µg) or vehicle (2.5 µl) in each naris, followed by 4 more doses every 24 hours. The Sham+Vehicle served as control. Neurobehavioral tests were performed from P21 to P25 in a double-blind manner. Brain injury evaluation by stereology technique were performed on P25. Statistical analysis was performed via two-way ANOVA followed by the Holm-Sidak method. The sample size was calculated to find a difference of 22% between means with a power of 85% and a significance of p < 0.05.

**Summary of Results** Our representative results showed that InInsulin protects both male and female pups against HI induced abnormal sensorimotor disturbances measured by beam walking and vibrissa forelimb placement tests (P20), less anxiety-like behavior during the elevated plus-maze test (P21), and abnormal long-term memory evaluated by novel object recognition test (P23). Only male pups had abnormal short term memory following HI during the Y maze test (P21) and memory phase of the passive avoidance test (P25), the findings were improved in HI+Insulin pups; (p < 0.05, n = 8/sex/groups/all tests). InInsulin also protected against HI induced reduction of hippocampal volume (p < 0.05, n = 4/sex/groups)

**Conclusions** Neonatal HI induced abnormal long-term neurobehavioral outcomes are worse in male pups; nevertheless, InInsulin improves all outcomes. Our results provide strong evidence in support of InInsulin as a non-invasive therapy for HI brain injury in term neonates.

**ENDOTHelial ADENOSINE MONOPHOSPHATE-ACTivated PROtein KINase ALPha (AMPKα) DEFICIENCY POTIentiates HYPERoxia-Induced EXPERimental BRONCHOPULMONARY DYSPLASIA (BPD) AND PULMONARY HYPERTENSION (PH)**

A Elsae*, R Menon, A Shrestha, B Shivanna. Baylor College of Medicine, Houston, TX

10.1136/jim-2021-SRMC.118

**Purpose of Study** BPD-associated PH is a common life-threatening sequela of preterm infants that lacks curative therapies. We showed that hyperoxia increases lung AMPKα activation in neonatal mice. Whether this alteration is a compensatory or contributory phenomenon in hyperoxia-induced experimental BPD is unclear. Thus, we hypothesized that endothelial AMPKα-deficient neonatal mice would be more susceptible to hyperoxia-induced experimental BPD and PH than their wild-type littermates.

**Methods Used** To determine the necessary role of endothelial AMPKα signaling in neonatal lung injury, we decreased endothelial AMPKα expression by breeding AMPKα-1flox/flox mice with Tie-Cre mice, and exposed endothelial AMPKα-1 sufficient or deficient mice pups to air or hyperoxia (70% O2) from PND1-14. Lung morphometric and echocardiographic studies were done on PND28 to determine the effects of AMPKα-1 gene and hyperoxia on alveolarization, lung vascularization, pulmonary vascular remodeling, and PH. To determine the sufficient role of AMPK signaling in neonatal lung injury, C57BL/6J mice were treated with daily i.p. injections of 1 mg/kg of the AMPK agonist, aminomimidazole-4-carboxamide ribonucleotide (AICAR) while they were exposed to air...
or hyperoxia through PND1-14. Lung morphometric studies were done on PND14 to determine the effects of hyperoxia and AMPK activation on alveolarization and lung vascularization.

**Summary of Results** Hyperoxia induced alveolar simplification, as evidenced by decreased radial alveolar counts and increased mean linear intercepts. Hyperoxia also decreased lung angio genesis. Further, hyperoxia induced pulmonary vascular remodeling and PH, as evidenced by increased medial wall thickness of resistance lung vessels, decreased pulmonary acceleration time/ejection time ratio, and increased right ventricular systolic pressure. However, these effects of hyperoxia were augmented in the presence of endothelial AMPKα-1 deficiency. By contrast, AICAR-mediated AMPKα activation attenuated hyperoxic lung injury.

**Conclusions** Our findings indicate that AMPKα signaling mitigates hyperoxia-induced experimental BPD and PH in neonatal mice. We propose that AMPKα is a potential therapeutic target for BPD infants with PH.

**Method Used**
We exposed neonatal Gdf15-/− mice, and wild type (WT) controls on a similar background to room air or hyperoxia (95% O2) for 5 days after birth (saccular stage of lung development). The mice were euthanized on PND 21 (alveolar stage of lung development). Lung morphometry was evaluated by the mean linear intercept (MLI). Pulmonary vessel density and macrophage count were quantified using immunohistochemistry. Statistical analyses were performed using the Prism 8 software.

**Summary of Results** Upon exposure to hyperoxia, the survival in Gdf15-/− mice was significantly decreased compared to WT mice (26% vs 57%, respectively, p < 0.01) (n=32–54/group). MLI was increased by hyperoxia exposure in both genotypes. Interestingly, alveolar simplification was higher in the Gdf15-/− females than WT females when exposed to hyperoxia (MLI = 30.0μm vs 26.2μm respectively; n=3–5/group, p < 0.001), with no significant difference among WT and Gdf15-/− males. Interestingly, Gdf15-/− mice had lower macrophage count in the lung compared to WT mice (macrophage counts/HPF = 4.9 vs 12.4 respectively, n=8/group, p < 0.001), with no sex-specific differences. The pulmonary vascular density was decreased in hyperoxia with no significant differences between both genotypes.

**Conclusions** Our results suggest that in the neonatal mouse BPD models, loss of GDF15 exacerbates neonatal hyperoxic lung injury with respect to alveolar development. We are currently measuring the cell-specific expression of GDF15 in the neonatal lung at different developmental time points. GDF15, a stress responsive cytokine, may modulate alveolarization in the developing lung.

### 119 LOSS OF GROWTH AND DIFFERENTIATION FACTOR 15 EXACERBATES NEONATAL HYPEROXIC LUNG INJURY

F Al-Muatares*, K Lingappa, Baylor College of Medicine, Houston, TX

**Purpose of Study** Bronchopulmonary dysplasia (BPD) is one of the most common morbidities among surviving premature infants. BPD is characterized by abnormal alveolar septation and aberrant vascular development. Growth Differentiation Factor 15 (GDF15) is a divergent member of TGF-β superfamily and its expression increases under various stress conditions including inflammation, hyperoxia, and senescence. Our prior studies showed that GDF15 expression is increased in neonatal mouse BPD models and that GDF15 loss exacerbates oxidative stress and decreases viability in human pulmonary endothelial and epithelial cells. Our overall hypothesis that loss of GDF15 will exacerbate hyperoxic lung injury in the neonatal lung in vivo.

**Methods Used** We exposed neonatal Gdf15-/− mice, and wild type (WT) controls on a similar background to room air or hyperoxia (95% O2) for 5 days after birth (saccular stage of lung development). The mice were euthanized on PND 21 (alveolar stage of lung development). Lung morphometry was evaluated by the mean linear intercept (MLI). Pulmonary vessel density and macrophage count were quantified using immunohistochemistry. Statistical analyses were performed using the Prism 8 software.

**Summary of Results** Upon exposure to hyperoxia, the survival in Gdf15-/− mice was significantly decreased compared to WT mice (26% vs 57% respectively, p < 0.01) (n=32–54/group). MLI was increased by hyperoxia exposure in both genotypes. Interestingly, alveolar simplification was higher in the Gdf15-/− females than WT females when exposed to hyperoxia (MLI = 30.0μm vs 26.2μm respectively; n=3–5/group, p < 0.001), with no significant difference among WT and Gdf15-/− males. Interestingly, Gdf15-/− mice had lower macrophage count in the lung compared to WT mice (macrophage counts/HPF = 4.9 vs 12.4 respectively, n=8/group, p < 0.001), with no sex-specific differences. The pulmonary vascular density was decreased in hyperoxia with no significant differences between both genotypes.

**Conclusions** Our results suggest that in the neonatal mouse BPD models, loss of GDF15 exacerbates neonatal hyperoxic lung injury with respect to alveolar development. We are currently measuring the cell-specific expression of GDF15 in the neonatal lung at different developmental time points. GDF15, a stress responsive cytokine, may modulate alveolarization in the developing lung.

### 120 ASSOCIATION BETWEEN CHOICE OF ANTI-SEIZURE MEDICATIONS AND TREATMENT FAILURE IN NEONATES WITH SEIZURES

1E Sewell*, 1,2SE Hamrick, 1,2RM Patel, 3MM Bennett, 3VTolia, 4K. Ahmad. 1Emory University School of Medicine, Atlanta, GA; 2Children’s Healthcare of Atlanta Egleston Hospital, Atlanta, GA; 3Baylor Scott and White Health, Dallas, TX; 4Baylor College of Medicine, San Antonio, TX

**Purpose of Study** To compare treatment failure between: (1) infants treated with phenobarbital (PHB) versus levetiracetam (LEV), for first-line treatment and (2) infants treated with phenytoin (PHT), compared to LEV, as second-line treatment following PHB.

**Methods Used** This retrospective cohort study included infants with seizures in the Pediatrix Clinical Data Warehouse from 2009–2018. We included neonates admitted for at least 3 days who received PHB or LEV as the initial anti-seizure medication (ASM) and excluded patients who received more than one ASM on the same day due to the inability to discern sequence of administration. Our primary outcome was treatment failure, defined as the need for additional ASM. Mixed effect logistic regression was used to compare the risk of ASM treatment failure after adjusting for confounding factors, including center.

**Summary of Results** Of the 6,842 included infants from 253 NICUs, 6,213 were treated with PHB and 629 were treated with LEV as first-line treatment. Of those treated first-line with PHB, 835 and 325 were treated second-line with PHT and LEV, respectively. The incidence of treatment failure was 31% in infants receiving first-line PHB, compared to 38% in infants receiving LEV (adjusted OR: 0.70; 95% CI 0.58, 0.84); there was no significant difference in mortality (adjusted OR 1.17; 95% CI 0.71, 1.94). Among PHB-treated infants receiving LEV compared to PHT as second-line treatment, there was no significant difference in treatment failure (22% vs. 26%, adjusted OR 0.76; 95% CI 0.54, 1.08), however second-line PHT use was associated with a higher odds of mortality (adjusted OR 2.34; 95% CI 1.35, 4.04).

**Conclusions** Initial treatment of neonatal seizures with LEV, compared to PHB, is associated with a higher rate of treatment failure. Among infants receiving PHB, second-line treatment with PHT, compared to LEV, was not associated with increased treatment failure, but was associated with increased mortality.

### 121 ALGORITHMIC MODEL FOR ACCURATE AND TIMELY DIAGNOSES OF APPENDICITIS IN CHILDREN

E Florez*, J Sitta, S Miller, A Smyly, E Varney, ST Linette, CM Howard. University of Mississippi Medical Center, Flowood, MS

**Abstract**
We present a novel algorithmic model for the diagnosis of appendicitis in children. This study was conducted at a single tertiary care hospital in the southeastern United States. Patients were included if they underwent an appendectomy for appendicitis between January 2016 and December 2019. The algorithmic model was developed using a machine learning approach, specifically a random forest algorithm. The model was validated using a test dataset. The algorithmic model significantly improved diagnostic accuracy compared to standard diagnostic criteria. The model also showed better diagnostic performance in patients with atypical presentations of appendicitis. The algorithmic model has the potential to improve the accuracy and timeliness of appendicitis diagnosis in children.
Purpose of Study Ultrasound (US) is the first-line imaging modality to diagnose appendicitis in children followed by computed tomography (CT). However, appendicitis evaluation in obese children through US has limitations that lead to additional imaging evaluations, delays in treatment, and increased cost. Our goal is to develop a model to predict which imaging modality (US or CT) would provide the most accurate diagnosis based on the body habit of children with appendicitis.

Methods Used This is a HIPPA-compliant, IRB approved single-center retrospective study. Pediatric patients with appendicitis symptoms admitted to the emergency room between 2015 and 2019 were enrolled (N=1111). Patients that underwent both US and CT were included in the study (N=396). Two independent readers performed anthropometric measurements such as waist circumference (WC) and sagittal abdominal diameter (SAD) using a DICOM viewer. Four readers contoured fat and muscle depots of a single CT slice centered at the L4-L5 intervertebral disc using a segmentation software. Statistical analyses were performed with Stata software. Linear Pearson coefficient was used to correlate WC and SAD with body composition and BMI. Inter-observer agreement was assessed by the intraclass correlation coefficient (ICC) with 95% CI. Finally, a model was developed to determine the probability of seeing the appendix by US.

Summary of Results The predictor model was based on BMI interactions (AUC=0.63, p<0.001). The model showed that the appendix in patients with BMI ≥ 20 kg/m² has <50% probability of being detected by US, which resulted in a high number of unidentified appendixes (>60%). This limitation was evidenced when ~30% of the diagnoses obtained using CT and US were discordant. Thus, our model suggests using CT images prior to diagnosing appendicitis or normal appendix. WC and SAD demonstrated a strong direct correlation with BMI (R²=0.88 and R²=0.86 respectively, p<0.001) and total adipose tissue (R²=0.80 and R²=0.79 respectively, p<0.001). Both intra- and inter-observer agreement were excellent (0.99 ICC, 95% CI). Finally, a model was developed to determine the probability of seeing the appendix by US.

Conclusions Our model allows a rapid and easy determination of the best imaging modality to diagnose appendicitis based on BMI while reducing the delay in diagnosis and misdiagnosis in a diverse pediatric population.
Adverse childhood experiences correlate to predicting inpatient croup outcomes

J Investig Med

Our data suggest that the deleterious nature of the pathogenic variants played an important role in the clinical manifestations of the disease. – (This sentence is hard to read, so check this out!) A recent study suggests limiting arginine dose to 100 mg/kg/day, however based on our experience this dose is not sufficient with the severe pathogenic variant identified in our cohort: c.707G>A, p.Arg236Gln. Indeed, the dose of arginine also depends on the protein intake of the patients which should be adjusted critically during the first 2 years of life, with dosages as high as 300 mg/kg/day. OLT was performed in 4/9 (44%) of these patients. These preliminary findings provide basis for continued expansion of early detection and further research into the treatment algorithms needed to optimize quality of life for those affected with this unique disorder.

### Abstract 124 Table 1

<table>
<thead>
<tr>
<th>ACE Score</th>
<th>PHQ-9 Score</th>
<th>Total</th>
</tr>
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<tbody>
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<td>&lt;4</td>
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<td></td>
</tr>
<tr>
<td>Count</td>
<td>74</td>
<td>18</td>
</tr>
<tr>
<td>Expected Count</td>
<td>69.6</td>
<td>22.4</td>
</tr>
<tr>
<td>% within ACE</td>
<td>80.4%</td>
<td>19.6%</td>
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<tr>
<td>% within PHQ-9 category</td>
<td>82.2%</td>
<td>62.1%</td>
</tr>
<tr>
<td>% of Total</td>
<td>62.2%</td>
<td>15.1%</td>
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<td>≥4</td>
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<td></td>
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<tr>
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<tr>
<td>% within ACE</td>
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<td>40.7%</td>
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<tr>
<td>Expected Count</td>
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<tr>
<td>% within ACE</td>
<td>75.6%</td>
<td>24.4%</td>
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<td>% within PHQ-9 Total</td>
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<td>100%</td>
</tr>
<tr>
<td>% of Total</td>
<td>75.6%</td>
<td>24.4%</td>
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### Abstract 125 Table 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>OR (95% CI)</th>
<th>P value</th>
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</thead>
<tbody>
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<td>Age, each additional month</td>
<td>0.96 (0.91, 1.02)</td>
<td>0.165</td>
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<tr>
<td>Sex, boys vs. girls</td>
<td>1.22 (0.60, 2.47)</td>
<td>0.581</td>
</tr>
<tr>
<td>Weight, each additional kg</td>
<td>1.01 (0.87, 1.16)</td>
<td>0.940</td>
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<tr>
<td>Age-defined tachycardia, present vs. not</td>
<td>1.11 (0.53, 2.31)</td>
<td>0.787</td>
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<tr>
<td>Age-defined tachypnea, present vs. not</td>
<td>2.33 (1.22, 4.43)</td>
<td>0.010</td>
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<td>Temperature, ≥38C vs &lt;38C</td>
<td>0.42 (0.20, 0.85)</td>
<td>0.016</td>
</tr>
<tr>
<td>O2 saturation,</td>
<td>2.34 (0.90, 6.10)</td>
<td>0.082</td>
</tr>
<tr>
<td>RE in ED, 3–4 doses vs. 1–2 doses</td>
<td>0.95 (0.36, 2.52)</td>
<td>0.919</td>
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<tr>
<td>Steroids in ED, any steroid vs. none</td>
<td>0.38 (0.02, 8.29)</td>
<td>0.541</td>
</tr>
<tr>
<td>Radiologic imaging, any imaging vs. none</td>
<td>1.31 (0.66, 2.61)</td>
<td>0.435</td>
</tr>
</tbody>
</table>

Purpose of Study To describe inpatient racemic epinephrine (RE) use for croup through emergency department (ED) parameters including time between RE treatments.

Methods Used We completed a retrospective chart review of patients admitted with a diagnosis of croup age 2 months to < 7 years old from 2016 to 2019 at a mid-south children’s hospital. All patients received at least one treatment of RE prior to admission. Patients with congenital airway anomalies, prior tracheal surgery, initial PICU admission, complex medical conditions, previous admission within the past 30 days, other primary diagnoses, or missing records were excluded. We assessed patient demographics, laboratory studies, radiologic studies, and other management in the ED. Data was analyzed using logistic regression.

Summary of Results Of 386 identified patients, 238 were included. 59 (24.7%) of these patients received additional RE during admission. The median time between 1st and 2nd doses of RE in the ED did not differ between patients who did not receive inpatient RE and those that did (1.90 hours vs. 1.85 hours, p = 0.71). Overall length of stay for patients who did not receive inpatient RE was significantly less with a
GASTRIC PERFORATION: A RARE COMPLICATION IN ANOREXIC PATIENTS

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Case Report Spontaneous gastric perforation in patients with eating disorders is a rare entity associated with high mortality. We present a case of an anorexia nervosa patient who had a gastric perforation. This patient’s poor nutrition likely led to impaired immune response which simultaneously masked and protected against this life-threatening condition.

A 13-year-old girl with a history of anorexia nervosa was admitted for severe malnutrition. Her diet had been very poor prior to presentation, mean estimated body mass index (MEBMI) was 61.5%. She denied binge eating, vomiting, diet pill, or diuretic use. She had cachexia, breast atrophy (MEBMI) was 61.5%. She denied binge eating, vomiting, diet pill, or diuretic use. She had cachexia, breast atrophy and cool extremities. She was started on a low intake (~1400 calories/day) refeeding plan. On day 1, she had mild abdominal pain that responded well to Tylenol. She had difficulty finishing her meals on day 2 and was given naso-gastric feeds to supplement. Her belly was soft and bowel sounds were present through the afternoon of day 2. At breakfast on day 3, the patient collapsed; she had a distended abdomen, absent bowel sounds, blue lips and a blood pressure of 65/35. Abdominal imaging revealed free air under the diaphragm. Emergent laparotomy was done with aspiration of ~4 liters of undigested food, including the salad she had at lunch on her first day. The stomach was perforated with partial necrosis. Dusky appearance of diaphragm, peritonitis and colon indicated abdominal compartment syndrome. The patient had a sub-total gastrectomy with J tube placement and, over time, was slowly transitioned to oral feeds with good weight gain.

Gastric perforation in anorexic patients is due to smooth muscle atrophy, diminished cytokinin release and autonomic dysfunction. The contents of aspiration indicate that she had a perforation well before the clinical signs manifested. Immune abnormalities due to severe malnutrition likely caused this delayed response. Although rare, providers managing refeeding among severely malnourished patients should be aware of the risk of perforation as well as the possibility that such a critical condition may be masked by immune system derangement.

LOUISIANA PEDIATRICIANS’ BELIEFS AND PRACTICES REGARDING ADOLESCENT PARENTS

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Purpose of Study Parenting adolescents face unique medical and psychosocial obstacles. Therefore, pediatricians are recommended to provide a medical home for both adolescent parents and their children. Pediatricians can provide guidance regarding contraception, continued education, social resources, and domestic violence and mental health screening. It is unknown how many pediatricians continue to provide such vital primary care for adolescent parents.

Methods Used An anonymous, 20-question survey was sent via email to 886 Louisiana pediatricians who were either members of the national or state chapter of the American Academy of Pediatrics. The survey included questions on pediatricians’ demographic characteristics, sexual health counseling practices, and beliefs and experiences with adolescent parents.

Summary of Results Of 101 respondents (11% response rate) the majority were white, female, and ages 30–49. Of all respondents, 79% indicated they provide primary care to adolescent mothers; nearly all agreed that adolescent mothers are at higher risk of social problems (99%) and mental health issues (92%); and 73% felt equally as comfortable treating adolescent females as younger children. Only 20% felt less qualified than other physicians to provide care for adolescent mothers. While 54% felt that adolescent mothers should continue receiving care from pediatricians, 70% felt that adolescent fathers should.

Conclusions Louisiana pediatricians recognize the social and mental health disparities faced by adolescent mothers and the majority continue providing their primary care. However, many more pediatricians believe they should care for adolescent fathers than believe they should care for adolescent mothers. Although further analyses of this data is ongoing, these initial findings generate hypotheses that merit further examination, such as what beliefs or biases may influence pediatricians’ attitudes about adolescent mothers, and whether further pediatrician training and support in the area of reproductive health can improve their confidence in providing the pediatric-focused primary care that adolescent mothers need.
VITAMIN K AND ECMO FOR NEONATAL HYPOXIC RESPIRATORY FAILURE

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10.1136/jim-2021-SRMC.129

Purpose of Study The need to maintain a relative coagulopathy during ECMO runs leads to complications from thrombotic or hemorrhagic events. Decreased vitamin K concentration or activity may underscore many of the bleeding complications observed in critically ill neonates. The study centered around evaluating the complications and outcomes in neonatal ECMO patients who received intravenous vitamin K during circuit runs to determine if vitamin K was safe and would improve the complication rates during ECMO use.

Methods Used A retrospective single center review compared complications (both thrombotic and hemorrhagic) and blood product use for neonates who received (n=21) or did not receive (n=18) a single dose of intravenous vitamin K after initiation of ECMO for respiratory failure. Following implementation of routine vitamin K for prothrombin time (PT) ≥14s during ECMO, outcomes were described in 89 consecutive neonates supported with ECMO for respiratory failure from 2014 to 2019. A subgroup of babies with congenital diaphragmatic hernia on ECMO was also described to compare.

Summary of Results Neonates who received vitamin K experienced fewer thrombotic complications and similar hemorrhagic complications as neonates who did not receive vitamin K. Total blood product exposure was modestly increased in neonates who received vitamin K, which was attributed to a higher exposure to fresh frozen plasma. ECMO run time, survival off ECMO, survival to discharge, and length of stay did not differ between cohorts. In the descriptive cohort, survival off ECMO for the cohort was 94.4%. Thrombotic complications occurred in 35.9% of the cohort and 100% of CDH neonates while bleeding complications occurred in 15.7% of the cohort and 13.3% of CDH neonates who received vitamin K for PT ≥14s during ECMO.

Conclusions Intravenous vitamin K is safe for use during ECMO and may be beneficial in neonatal ECMO to help reduce complication rates.

BREASTFEEDING VERSUS FORMULA FEEDING IN AN URBAN ACADEMIC GENERAL PEDIATRICS CLINIC

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10.1136/jim-2021-SRMC.130

Purpose of Study Exclusive breastfeeding through 6 months of life is recommended by the AAP. Benefits for the infant include a decrease in infections and obesity, and benefits to the mother include a decrease in postpartum bleeding and cancer. Despite these benefits, many mothers in our clinic choose not to breastfeed. According to the TN Department of Health, 75.8% of TN infants born in 2017 had ever breastfed, compared to the national average of 84.1%. The rates appear to be even lower in our patient population. Our study seeks to determine the rate of breastfeeding in our clinic and the motivation behind the choice to breastfeed or formula feed. This information can be used to guide resident counseling to mothers in hopes of increasing our clinic breastfeeding rate.

Methods Used IRB approval was obtained. A 16-question multiple-choice survey was given to mothers of newborn infants at their newborn well child checks. The surveys, without identifying factors, were collected by residents. The data was entered into a database for analysis.

Summary of Results 25 surveys were collected, and 22 were fully completed. Based on preliminary data, 36% of mothers are formula-feeding exclusively, 28% are breastfeeding exclusively, and 36% are doing both. The majority of first-time mothers are planning on breastfeeding. Almost 50% of mothers who choose to breastfeed state their motivation is believing it’s ‘best for the infant.’ The infant-feeding practices of friends did not influence mothers; however, their own mothers’ practices had influence. 17% of women noted work was the reason they are formula-feeding and 17% noted free formula received through WIC led them to formula-feed; 21% of women choose formula because they had used it prior. 80% of women stated they have received breastfeeding education. Finally, most women receive WIC benefits.

Conclusions Our results indicate that most women are formula-feeding or supplementing with formula. Most women who choose to formula-feed do so out of convenience or because they receive WIC benefits. Some women had not received education about breastfeeding or its benefits. These results confirm lower breastfeeding rates in our clinic and support a need for reevaluation of our understanding of mothers’ choices for infant-feeding. The information gathered can be used to guide counseling for our community.

RARE CASE OF SEVERE COVID-19 IN OTHERWISE HEALTHY INFANT AT 4 DAYS OF LIFE

10.1136/jim-2021-SRMC.131
Background COVID-19 is considered to be relatively rare in the neonatal period. Transmission primarily occurs via respiratory droplets from a caregiver in the postnatal period. Two groups of neonates are currently believed to be higher risk of severe disease–preterm infants and those with underlying medical conditions.

Methods Used We present case report of a neonate with severe COVID-19 presenting at our institution.

Case presentation A healthy 4-day-old female, born at 39 weeks via normal spontaneous vaginal delivery with no birth complications, experiences a brief resolved unexplained event (BRUE) during outpatient COVID swab. Family reported infant had not been feeding well and at that time five household members were known COVID-positive. She was admitted to the Pediatric Intensive Care Unit (PICU) after desaturation to 87% while feeding. She was confirmed to be COVID positive.

She had persistent apnic and bradycardic spells that prompted intubation until day 3 of stay. Following extubation, she repeatedly desaturated to the mid-80s while on high flow nasal cannula, requiring reintubation on day 5. During this time, sepsis workup was done which was negative; additional negative studies included head ultrasound, pre/post-duodenal saturation, viral respiratory panel, HSV PCR, and metabolic panel. On day 12, she again desaturated and was found to have a right pneumothorax on chest x-ray necessitating chest tube placement. On day 17, she was given convalescent plasma and dexamethasone for lung support due to persistent respiratory distress with recurrent right pneumothorax.

Conclusions Contrary to popular belief, severe neonatal COVID-19 infection is not limited to infants born prematurely and those with preexisting medical conditions. It is critical to counsel families on the risk of exposing newborns to known COVID-positive individuals.

Purpose of Study Clonidine, originally designed as an antihypertensive agent, has also been used in the treatment of various behavior and sleep disorders. Over time, prescription of clonidine to children for these conditions has increased. In our prior study on clonidine, the epidemiology, management, and a review of clonidine related hospitalizations in children were studied from 1987–1992. The purpose of this study is to describe the changes in these parameters for clonidine exposures at the same institution, a quarter-century later.

Methods Used We conducted a retrospective study of clonidine ingestion in children ages 0–6 from 2013–2018. Our poison center’s database was queried and a list of cases was obtained. Only cases where clonidine was the sole ingestant were included. Using electronic medical records we obtained demographic information and patient management data including use of and response to naloxone. Descriptive analysis was performed to calculate frequencies and proportions. We compare findings from this study with the prior study.

Summary of Results 80 cases were included in the current study, there were also 80 cases in the prior study. The median age of all patients was 2.4 years (IQR: 1.8 to 3.1). Clonidine prescribed most often belonged to the patient’s sibling (30.0%), the patient’s grandparent (26.3%), or self (12.5%); compared to the previous study of 1987–1992 where clonidine most commonly belonged to the grandmother (54%). 88.8% of patients in this study utilized Medicaid as their
primary insurance, compared to 34% with Medicaid coverage as their primary insurance in the prior study. 88.8% of patients were admitted to an intensive-care unit for monitoring, with an average length of stay of 21.6 hours. 11.5% of patients required intubation due to respiratory failure. Naloxone was utilized in 53.8% of patients, with 60.5% noting symptom improvement, compared to 49% of patients receiving Naloxone with 16% showing improved symptomatology in the prior study.

Conclusions As clonidine is being prescribed more frequently to pediatric patients, toxic exposures in children are more likely to come from a sibling or a medication prescribed to self than a grandparent. Naloxone as an antidote for clonidine can prove to be effective.

**134 TEENAGER WITH HISTORY OF VAPING DIAGNOSED WITH E-CIGARETTE OR VAPING PRODUCT USE-ASSOCIATED LUNG INJURY (EVALI)**

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10.1136/jim-2021-SRMC.134

**Introduction** Recent data has shown that usage of electronic cigarettes (e-cigarettes) is steadily increasing among high school students in the U.S. Reports have shown e-cigarettes to cause a broad spectrum of pulmonary disease including lipoid pneumonia, acute eosinophilic pneumonia, hypersensitivity pneumonitis and diffuse alveolar hemorrhage. More recently this entity called E-Cigarette or vaping product use-associated lung injury (EVALI) has been more widely seen.

**Case Description** 13-year-old female admitted due to respiratory distress with concern of atypical pneumonia evident on chest X-ray. She was otherwise healthy with no underlying disorders. Initial laboratories showed leukocytosis at 23,000 and a CRP of 4.7. Patient disclosed daily use of multiple vaping products including Bidi™ Stick, TKO™, Bang™, Vuse™, and NJOY™. The patient was managed with albuterol, ceftriaxone, azithromycin as well as systemic steroids and did not require supplemental oxygen while admitted. Patient was provided cessation education and a cessation hotline number on discharge along with antibiotics and steroids to complete dosing course.

**Discussion** E-cigarettes function by conversion of liquid to vapor by adding heat, thus the term ‘vaping’ is commonly used. Symptoms of EVALI include dyspnea, chest pain, cough, hemoptysis and gastrointestinal symptoms like nausea, vomiting, abdominal pain with fever and malaise. Patients often present with tachycardia, tachypnea, fever and hypoxemia, like our case. Computed Tomography is the preferred imaging modality to diagnose EVALI and the mainstay treatment is administration of steroids. A positive response to steroids suggests an inflammatory pathway in the progression of EVALI, as evident in our patient.

**Conclusions** Increasing use of e-cigarettes and vaping products are linked with significant lung injury in adolescent population. In teenagers presenting with respiratory distress, the likelihood of EVALI should be considered. Investigation into personal history of vaping is the cornerstone of diagnosis and can be challenging. It is imperative to highlight case reports and implement education with community support to aid in cessation of use.
Background We describe the case of a previously healthy 3-year-old female with no significant medical history who presented with a 2-day history of refusal to walk, urinary retention, and increasing lethargy. MRI at time of admission showed cord expansion from the cervicomedullary junction to T12 as well as diffuse leptomeningeal enhancement. An acute flaccid paralysis workup was initiated. She was started on IVIG and solumedrol for treatment of the inflammation. Plasmapheresis was considered but declined due to risks and decreased likelihood of efficacy due time from initial symptoms. She was also provided Fluoxetine due to some evidence showing in vitro response in CNS enterovirus infections. Infectious disease labs were only notable for HHV IgG + as well as HSV+, but lab results were only notable for mildly elevated SSA. Encephalitis workup was negative. AFM panel was negative. The patient had minimal response to steroids and IVIG, with continued need for bladder caths and limited ability to move bilateral legs. She was transferred from our facility to neuro-rehab continued care.

Discussion Acute flaccid paralysis is a broad term for a number of neurological disease processes characterized by weakness or paralysis and reduced muscle tone. Both the diagnostic evaluation and treatment are time-sensitive and should be initiated as soon as possible after the patient develops symptoms. Diagnostic evaluation includes MRI, CSF studies, autoimmune studies, and stool, serum, nasopharyngeal swabs for viral etiologies. Treatments are usually aimed at reducing the inflammatory state and include IVIG, steroids, plasmapheresis but studies are limited and it is difficult to make conclusions about efficacy.

Case Report A 40 yo male presented to the emergency department with 2 days of abdominal pain, nausea, vomiting, and poor oral intake following 2 weeks of diarrhea. The pain was burning, worse with meals, and rated as a 10/10 at its worst. He denied fever, chills, hematochezia, melena, chest pain, or shortness of breath. He had no past medical history, recent travel or sick contacts, and was taking no prescribed or over the counter medications. Exam was significant for RUQ tenderness without guarding, rigidity, organomegaly, or masses. Laboratory results were significant for total bilirubin 2.8 mg/dL, direct bilirubin 2.5 mg/dL, alkaline phosphatase 358 EU/L, ALT 1771 EU/L, AST 1535 EU/L. Abdominal ultrasound confirmed biliary obstruction with cholecystitis. Laparoscopic cholecystectomy was performed without complication, finding an acutely edematous, distended, acalculous gallbladder. On day 4, total bilirubin increased to 4.8 mg/dL. HIDA scan confirmed biliary obstruction with cholecystitis. Lab results were significant for total bilirubin 2.8 mg/dL, direct bilirubin 2.5 mg/dL, alkaline phosphatase 358 EU/L, ALT 1771 EU/L, AST 1535 EU/L. Abdominal ultrasound confirmed no abnormality of the liver, but a contracted gallbladder, with wall thickening measuring 3.4 mm. CT scan of the abdomen confirmed mucosal hyperemia and pericholecystic edema, no gallstones were visualized. Hepatitis panel was reactive for hepatitis A IgM, indicating acute viral infection. The patient was managed symptomatically, without improvement. On day 4, total bilirubin increased to 4.8 mg/dL. HIDA scan confirmed biliary obstruction with cholecystitis. Laparoscopic cholecystectomy was performed without complication, finding an acutely edematous, distended, acalculous gallbladder. Abdominal pain, nausea, and vomiting resolved, diarrhea improved. Patient was discharged home with self-care.

This patient had acalculous cholecystitis superimposed on acute hepatitis A. Hepatitis A remains asymptomatic or presents with self-limiting abdominal pain, nausea, vomiting, diarrhea, or jaundice. Hepatitis A Virus has rarely been
associated with the invasion of the biliary ducts and gallbladder epithelium. The subsequent cell mediated immune response can lead to acute acalculous cholecystitis. Persistent, severe abdominal pain in the setting of increased bilirubin indicates further evaluation for biliary obstruction, as treatment with laparoscopic cholecystectomy may lead to symptomatic improvement and prevent life threatening complications of gangrene, perforation, and empyema. It is important to consider acalculous cholecystitis as a potential etiology of RUQ pain in the setting of hepatitis A with hyperbilirubinemia, with surgical excision as the curative treatment.

Case Report A 31-year-old female presented with progressive headache, nausea and neck stiffness for 2 days. She reported a history of aseptic meningitis and herpes zoster infection. She had photophobia, neck stiffness and positive meningeal signs. She had unremarkable complete blood count, comprehensive metabolic panel, brain computerized tomography and brain magnetic resonance imaging. Lumbar puncture showed colorless CSF, with 333 cells/mm3 (62% lymphocyte), 88 mg/dl protein and 58 mg/dl glucose. Meningitis panel was positive for HSV2.

Initially, she received Vancomycin, Ceftriaxone and Ganciclovir which were discontinued after the negative blood and CSF cultures. The patient improved with Acyclovir and discharged on Valacyclovir.

Discussion Mollaret’s meningitis (recurrent benign aseptic meningitis) is a rare condition, characterized by multiple episodes of fever and meningeal irritation. It is most commonly caused by Herpes Simplex Virus type 2 (HSV-2). It can be associated with the invasion of the biliary ducts and gallbladder epithelium. The subsequent cell mediated immune response can lead to acute acalculous cholecystitis. Persistent, severe abdominal pain in the setting of increased bilirubin indicates further evaluation for biliary obstruction, as treatment with laparoscopic cholecystectomy may lead to symptomatic improvement and prevent life threatening complications of gangrene, perforation, and empyema. It is important to consider acalculous cholecystitis as a potential etiology of RUQ pain in the setting of hepatitis A with hyperbilirubinemia, with surgical excision as the curative treatment.

Here, we present two cases of severe COVID-19 infection that involved a prolonged stay in the ICU and intubation. The hospital course was complicated by an acute kidney injury, requiring renal replacement therapy, and septic shock. Early during the hospitalization, both cases developed acrocyanosis, also referred to as pseudo-chilblains, of the distal lower extremities. Both patient survived and subsequently discharged to rehabilitation facility.

Introduction Urinothorax is a rare thoracic complication involving the presence of urine in the pleural cavity through a retroperitoneal leakage frequently caused by obstructive uropathy or mechanical genitourinary (GU) injury. Diagnosis of urinothorax requires a high clinical suspicion specially in patients with recent abdominal surgical intervention.

Case Description A 21 year old man with recent hospitalization for left kidney stone presented with fever, shortness of breath and new large left sided pleural effusion. During his recent hospitalization, he underwent percutaneous nephrostomy tube placement, and lithotripsy that was complicated by MRSE bacteremia. He was discharged with appropriate antibiotics. On admission, thoracentesis of the left pleural cavity showed exudative fluid with inflammatory cells and pleural to serum Cr ratio of 1. A repeat CXR the following day showed re-accumulation of fluid in the left pleural cavity requiring a second thoracentesis yielded similar fluid analysis. A technetium 99m renal scan demonstrated increased radiotracer uptake in the left hemithorax suggestive of urinotherapy; however, it was unable to delineate a definitive sinus tract between urinary systems and chest cavity. Given the recurrence of fluid in the left hemithorax, chest tube was placed with intra-pleural alteplase and dornase to expedite the drainage of exudative effusion. The rate of fluid accumulation decreased over
time, and the chest tube was removed. He was discharged on antibiotics.

Conclusion Urinothorax is a clinical diagnosis and should be included in the differential diagnosis of pleural effusion in any patient with a recent history of urological, gynecological, or intra-abdominal procedure. Pleural fluid analysis in our patient showing both infectious and urinoma was intriguing and required further investigation with radiotracer renal scan. Although pathological tract was not discovered, the evidence of radiotracer in the left hemithorax cemented our differential diagnosis. Urinothorax may self-resolve with supportive measures such as serial thoracentesis or chest tube placement with the resolution of obstructive uropathy.

Abstracts

MORE THAN A HEADACHE: ANAPLASTIC PLEOMORPHIC XANTHOASTROCYTOMA

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Case Report Chronic headache is a common complaint in the outpatient setting with multiple etiologies, including malignancy. Anaplastic Pleomorphic Xanthoastrocytoma (APXA) is a rare brain tumor composing less than 1% of all astrocytoma and 62 adults diagnosed per year. APXA presents as a slow-growing mass in the temporal lobe, with new onset of seizures. We present the case of a successful treated patient of APXA which presented with indolent headaches.

A 41-year-old man with a two-month history of progressive headaches, described as pressure-sensation 10/10 located at bitemporal area. These headaches were associated with photophobia and phonophobia and interfered with his activities. Rest of review of system was negative. Physical examination negative for neurological deficits. CT scan revealed a mass on right frontal lobe. MRI with IV gadolinium showed an intraxial mass measuring 2.7 cm with vasogenic edema and mass effect upon right lateral ventricle, displacement of frontal horn and a midline shifting. Staging CT Scans negative for metastasis. Vasogenic edema was treated with Dexamethasone and the patient had resection of tumor.

Pathology report had leptomeningeal and subarachnoid invasion. Tumor cells with nuclear pleomorphism, multinucleated and multinucleated forms, nuclei with herniated eosinophilic cytoplasmic profiles, and up to 7 mitoses 10 high-power fields. Immunohistochemistry (IHC) was + S100, +GFAP and +vimentin and negative for the mutation in V600 of BRAF gene. The patient was diagnosed with APXA WHO Grade III. The patient had full recovery and is on active surveillance with serial Brain MRIs without recurrence.

APXA has an overall survival rate of 40–50% within five years. This case demonstrates the importance of adequate history and physical examination for headache stratification and workup. Also, the importance of IHC and cytogenetic testing for prognosis and identification of target therapy. Medicine is dynamic and multidisciplinary, but its foundation starts with an assertive history and physical examination for adequate management of a time-sensitive diagnosis.

A HEART TOO SWEET: A CASE REPORT OF MYOCARDIAL INFARCTION TRIGGERING DIABETIC KETOACIDOSIS


Case Report Diabetes ketoacidosis (DKA) is a life-threatening complication more commonly seen with type 1 than type 2 diabetes mellitus (T2DM), with an increasing hospitalization rate of more than 140,00 per year. DKA can be precipitated by severe stressors like infections, medication noncompliance, drugs, or new-onset diabetes. Non-infectious etiologies for DKA responsible for 40% of the cases include myocardial infarction, cerebrovascular accidents, pancreatitis, among others. We present a case of acute myocardial infarction (MI) triggering diabetic ketoacidosis in a patient with T2DM.

A 73-year-old male with hypertension, T2DM and chronic kidney disease, presented with nausea, vomiting, and diarrhea. Patient was found critically ill and hemodynamically unstable, requiring intravenous fluids and vasopressors. Laboratories showed leukocytosis, hyperglycemia over 1500 mg/dL, high anion gap metabolic acidosis, lactatemia, elevated b-hydroxybutyrate, acute kidney injury and severe hyperkalemia. Elevated highly sensitive troponins of 439 ng/L, which peaked at 6915 ng/L. EKG showed peaked T waves and wide QRS complex managed with intravenous calcium gluconate, insulin and emergent hemodialysis was started. Subsequent EKG showed atrial fibrillation with fast ventricular response and inferolateral ST segment depressions. No infectious foci were found, nor culprit drugs on further review. Cardiac catheterization showed 90% stenosis of the mid left anterior descending coronary artery and branch, and the patient underwent bypass surgery on resolution of his DKA. Findings were consistent with a type 1 non-ST segment elevation myocardial infarct as the cause of his DKA.

MI accounts for approximately 1% of the precipitating causes of DKA in T2DM and responsible for 28% of the deaths in these patients. Painless acute coronary syndrome should always be considered in the setting of DKA without apparent precipitant, especially in elderly patients with multiple risk factors for coronary events as they have been associated with high mortality risk. Early detection of DKA precipitants allows prompt guided therapy, metabolic recovery, and improved prognosis.

FOURTH TIME’S THE CHARM: THE IMPORTANCE OF CLINICAL JUDGEMENT IN COVID-19


Case Report SARS-CoV-2 is an enveloped positive-stranded RNA that is part of the same family as MERS and SARS. This virus is responsible for the current COVID-19 pandemic. Symptoms varies from asymptomatic carriers to a viral-like illness with fever, shortness of breath, and cough. The preferred initial testing is a nucleic acid amplification test with reverse-transcription polymerase chain reaction assay (RT-PCR) from a nasopharyngeal (NP) swab. We present a case of positive
SARS-CoV-2 infection in a patient with multiple false-negative results.

A 69 years-old male presented with fever, chills, malaise, anorexia, nausea, watery diarrhea and dry cough for 5 days. He denied sick contacts or recent travel. Vital signs were remarkable for fever and borderline blood pressures. The physical exam was unremarkable. Chest x-ray showed bibasilar airspace disease. Chest CT scan showed focal left lower lobe consolidation. He was started on empiric antibiotic therapy for community-acquired pneumonia. Laboratories were remarkable for elevated LDH, CRP, and d-dimers. Initial NP RT-PCR for SARS-CoV-2 was negative. The test was repeated on three different occasions, given the high clinical suspicion of COVID-19 pneumonia, all were negative. The patient continued with high fevers and saturation levels of less than 90%. Chest CT scan was repeated which revealed worsening with development of multifocal bilateral peripheral ground glass and air space opacities. Laboratories showed ferritin on increasing trend and CRP decreasing. Bronchoscopy was done and RT-PCR SARS-CoV-2 from bronchoalveolar lavage was positive. The patient was discharged under isolation measures. Repeated testing was negative, and he made a full recovery.

Comparative data on the accuracy of testing is limited. Preliminary data suggest that sensitivity varies between sampling specimens. Possible mechanisms include viral RNA sample degradation and poor sampling. Recent data favors testing within eight days after exposure and three days after onset of symptoms. Care must be taken in interpreting tests during the early infection period. If high clinical suspicion, infection should not be ruled out only based on NP RT-PCR SARS-CoV-2.

**Case Report**

Fecal impaction is a known complication of chronic constipation and particularly bothers the elderly. Common complications include hemorrhoids, megacolon, overflow diarrhea and obstructive uropathy among others. Overflow diarrhea is often misdiagnosed and treated with antidiarrheals leading to worsening impaction. Obstructive uropathy is a well-established complication of fecal impaction with obstruction occurring at any level. The elderly are at high risk due to multiple factors including diabetes mellitus, dementia, opioid use, depression among others. Many case reports have been published with fecal impaction and obstructive uropathy though none reported overflow diarrhea as a presentation.

An 82-year-old male patient presented with diarrhea and acute kidney injury that was caused by fecal impaction that led to obstructive uropathy. He had a 4-week history of nonbloody watery diarrhea with associated fecal incontinence and generalized abdominal pain and a long-standing history of constipation prior to this. Generalized abdominal tenderness with mild diffuse tenderness and a distended urinary bladder were noted on exam, along with normal rectal tone and loose brown stool in absence of hemorrhoids or prostate enlargement. Lab work showed elevated creatinine and hypokalemia. Upon IV fluid resuscitation and Foley catheter placement, CT abdomen was done which showed bilateral hydronephrosis.

Stool studies showed no evidence of infection. He was managed with laxatives and had significant improvement in kidney function as well as reduced stool burden.

Our patient had multiple risk factors for impaction including age, immobility, diabetes, and medications including azacitidine.

Chronic constipation in our patient led to fecal impaction which eventually led to overflow diarrhea and obstructive uropathy. It is important to consider impaction as a cause of fecal incontinence and diarrhea in the elderly as it can lead to high morbidity and mortality. The treatment of this diarrhea is counterintuitive since the impaction benefits from catharsis not antidiarrheals. Diet counseling, biofeedback, and rarely surgical intervention can be used in refractory cases.

**Case Report**

Melanoma is the most aggressive type of skin cancer and the sixth most common cancer in North America. Acral lentiginous melanoma accounts solely for 3% of all melanomas. However, it is considered the most common type of melanoma among Asians.

A 69-year-old Asian male with type 2 diabetes mellitus, psoriasis, and arterial hypertension presented with one-week history of altered mental status with associated memory loss, poor appetite, weight loss, weakness and imbalance. Initial vitals and laboratories were unremarkable. Brain CT scan revealed multiple brain lesions, but chest and abdominopelvic CT were negative. The patient had a questionable history of uncooked pork consumption. Steroids were given without improvement. Repeated head CT without contrast yielded innumerable hyper-attenuating lesions throughout the parenchyma with evolving hematoma and worsening edema, suggestive of hemorrhagic metastatic deposits. A thorough examination was solely remarkable for poor dentition with caries, psoriatic plaques throughout knees and elbows, as well as a callous-like ulceration with scant black spots in the left heel. MRI revealed an increase in the number and size of supratentorial and infratentorial lesions with edema, mass effect and mild left to right midline shift without herniation. Given a significant increase in the number of lesions in three days, an infectious etiology was highly suspected. Empiric antibiotic therapy was provided despite negative infectious workup. Transesophageal echocardiogram revealed vegetations in pulmonic and mitral valves and a speckled pattern in the myocardium. Blood cultures remained negative. A transesophageal echocardiogram could not be performed. Biopsy of an evolving left heel callous-like ulceration with purplish hue and darker tone yielded a diagnosis of acral lentiginous melanoma. New imaging revealed metastatic lesions in the abdomen, pelvis, and chest.

Acral lentiginous melanoma usually presents in the soles of the feet. This patient’s presentation is consistent with a diagnosis of metastatic melanoma with possible cardiac involvement. This case illustrates the importance of a thorough physical examination and history. By raising awareness of such an uncommon, aggressive diagnosis, we aim to ensure prompt diagnosis and better outcomes.
Ramsay Hunt Syndrome and the Importance of Early Diagnosis

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Case Report 58 yo female w/ PMH of multiple sclerosis (MS) and varicella in childhood presents for eval of L cheek swelling and L ear pain. She was discharged the prior week after inpatient treatment of L otitis externa (OE) secondary to MSSA w/outpatient course of Keflex and Cipro ear drops. Vitals stable and physical exam normal besides mild swelling of L cheek. Labs unremarkable. IV cefepime and vanc started inpatient treatment of L otitis externa (OE) secondary to MSSA. Rash resolved prior to this hospitalization and diagnosis of RHS was missed for over one week from its initial presentation.

RHS is the reactivation of latent varicella-zoster virus (VZV) in the geniculate ganglion of CN VII. It commonly presents as a vesicular rash of the external ear/tongue/palate and acute facial paralysis. Other symptoms of RHS experienced by this patient: medial deviation of L eye (L CN VI nerve palsy), horizontal nystagmus, and hearing loss. Symptoms of RHS like nausea, vertigo, and gait abnormalities could not be discerned from her baseline 2/2 MS.

Gold standard for diagnosis of VZV is PCR, but this test was unavailable acutely. As such, emphasis was placed on patient treatment over her diagnosis. D/t her advanced age, PMH of varicella as a child, the stress of MS, and her recent otitis externa, this patient had a higher risk for VZV reactivation. Combined w/ her rash from her prior ED visit and her improvement w/ treatment, RHS could reasonably be diagnosed.

At six-month f/u, patient continued to experience facial paralysis w/ difficulty closing her L eye. D/t the poor prognosis of facial paralysis 2/2 RHS, prompt diagnosis and treatment are key to prevention and good outcomes.

Bullosum Pemphigoid Mimicking Cellulitis

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Case Report Bullous Pemphigoid (BP) is the most prevalent autoimmune blistering skin disease in the Western world affecting mainly the elderly population. The diagnosis is based on clinical assessment along with specific immunopathologic findings on skin biopsy. Risk factors include genetic factors, environmental exposures, and several infections including hepatitis B, hepatitis C, Helicobacter Pylori, Toxoplasma Gondi and Cytomegalovirus. A variety of drugs have been associated with bullous pemphigoid including but not limited to dipethyldpeptide-4 (DPP-4) inhibitors, loop diuretics, spironolactone and neuroleptics. Associated neurologic disorders (dementia, Parkinson’s disease, bipolar disorder, previous stroke history and multiple sclerosis) have also been described. Common clinical presentation consists of extremely pruritic inflammatory plaques that resemble eczematous dermatitis or urticaria, followed by formation of movement w/o relieving factors. She denied recent trauma, discharge, redness, numbness, or weight loss. Prior to presentation, she started taking Lyrica and had been unable to work for 5–6 wks due to generalized pain. Physical exam demonstrated a palpable 4 cm subcutaneous mass in her L buttock. The mass was non-tender, partly mobile, and firm in consistency. U/S showed a 2.3 × 1.3 × 2.5 cm hypocycic mass. MRI w/contrast revealed a 2.7 × 2.2 × 2.0 cm mass involving the inferior L gluteus medius/maximus chest inferior to the ischial tuberosity w/iso- to hypo-intense signal on T1 imaging, hyperintense signal on T2 imaging, and peripheral rim enhancement. She underwent radical wide local excision of the intramuscular mass, which yielded a 6.0 × 4.5 × 3.7 cm specimen of yellow-white, fibrofatty tissue covered by small amounts of red, striated muscle. Due to concern for a soft tissue sarcoma, the specimen was serially sectioned and revealed a well-circumscribed mass measuring 2.7 × 2.5 × 1.8 cm. The mass had a white, whorled gelatinous appearance. Findings were c/w an intramuscular myxoma.

Intramuscular myxoma (IM) is a rare, benign neoplasm of mesenchymal origin w/an incidence of 1:1,000,000. Majority of lesions present in the 4th to 6th decade of life w/a slight female predilection. The tumor most frequently involves large muscle groups of proximal extremities. IMs usually appear as a slow-growing solitary, painless mass that is firm and partly mobile. 5x may arise if the tumor compresses nearby structures. Multiple IMs can be observed in association w/fibrous dysplasia, in which Mazabraud’s syndrome and McCune-Albright syndrome should be considered. Nonspecific clinical sx and radiologic findings make pre-op dx challenging to distinguish IMs from other myxoid lesions, especially low-grade malignant myxofibrosarcomas. MRI is the preferred imaging modality, which characteristically shows hypointense signal on T1 imaging, hyperintense signal on T2 imaging, and peripheral enhancement. Established dx requires histopathological examination. Surgical excision is curative, and recurrence is unlikely.
tense bullae with subsequent erosions. Typical distribution involves the trunk and extremities. Mucosa is typically spared affecting only 10–30% of patients. Several unusual clinical presentations of bullous pemphigoid have been described such as nonbullous forms with erythematous excoriated papules, plaques, and nodules. Other reported findings include urticarial lesions, prurigo-like nodules, multiple small vesicles resembling dermatitis herpetiformis or pompholyx, vegetating and purulent lesions localized in intertriginous areas, and even exfoliative erythroderma. Recognition and management of such cases can present a diagnostic challenge to clinicians. Here we describe another variant which to our knowledge is the first case to present with a cellulitis-like presentation in a patient with a known history of bullous pemphigoid.

**Case Report** A 47-year-old CM with PMH of Lynch Syndrome with partial colectomy presented to the ocular ED with a 1-week history of painless vision loss. The vision loss was sudden-onset, slowly progressive, and distributed like a curtain drawn down over his superior visual field. He also noted new-onset floaters and a visible 'dust trail.' Left eye fundoscopy revealed bullous inferior retinal detachment with an inferior mass obscuring the periphery. The mass notably had scant peripheral pigmentation with heme over the superior edge. B-scan showed low-lying serious retinal detachment in the left eye and a $12 \times 16 \times 14$ mm echodense ciliary body tumor.

He was referred for left eye enucleation and cytology with differential of retinal detachment secondary to metastatic adenocarcinoma vs primary amelanotic melanoma of the ciliary body. Colonoscopy and endoscopy were WNL 3 months prior. Cytology was consistent with amelanotic melanoma. He was referred for metastasis workup including LFTs, CT chest and abdomen, and MRI brain.

**Discussion** Retinal detachment (RD) classically presents with painless peripheral vision loss, new-onset flashes or floaters, or a curtain drawn down over the peripheral visual field. Unlike rheumatogenous RD which involves a retinal tear that leads to detachment, exudative RDs occur in the absence of retinal breaks and may arise secondary to choroidal neoplasms (e.g., ciliary body melanoma). Lynch syndrome is a cancer syndrome commonly involving GI and gynecological malignancies such as adenocarcinomas. Though rare, adenocarcinomas can metastasize to the ciliary body of the eye. In this case the eye was enucleated based on COMS guidelines, which recommend observation for small tumors ($<2.3$ mm apical height), brachytherapy for medium-sized ($2.5–10$ mm height and $\leq 16$ mm diameter), and enucleation for large ($>10$ mm height or $>16$ mm diameter). Primary ciliary melanoma warrants screening with LFTs and abdominal & chest imaging.

**Conclusion** RD may be the presenting manifestation of ocular tumors, especially in the context of hereditary cancer syndromes. RD and suspected ocular tumor workup includes dilated eye exam and B-scan imaging. Tumor size in conjunction with differential may dictate surgical intervention prior to cytology.

**152** **AN UNUSUAL CASE OF NON-CARDIOGENIC PULMONARY EDEMA AND HEPATITIS DUE TO RICKETTSIAL INFECTION**

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**Case Report** A 42 yr old African American male presented with myalgia, abdominal pain and diarrhea, he was admitted to ICU due hypotension of 90/63 mmHg. On examination his abdomen was tender with a rapid shallow breathing at the rate of 35/min. Labs were significant for WBC 14.99k, AST 119, ALT 98, Bili 4.9 mg/dl and lactate of 2.3 mmol/L. He was started on Metronidazole, Cefepime for a possible abdominal source of infection and IV vancomycin was added. Extensive workup failed to localize the source of infection. Bedside ultrasound showed diffuse B lines in all fields and no consolidation concerning for pulmonary edema. Echo revealed...
a EF of 20% without LVH or dilated cardiomyopathy. Right heart catheterization showed normal RA and capillary wedge pressures with reduced CO suggestive of non-cardiogenic pulmonary edema. Despite treatment he progressed with worsening WBC, transaminitis and bilirubin which prompted a liver biopsy which was normal and no congestion was noted. RMSF titres were found to be significantly elevated at IgG 1:256 and IgM 1:64. He was started on doxycycline, and he gradually improved with a down trending WBC, liver enzymes and was extubated.

RMSF is a tick-borne disease which presents with non-specific flu-like symptoms which can complicate the diagnosis but can have fatal outcomes unless treated appropriately. Our patient has all factors known to cause high case fatality associated with RMSF including African American race, alcohol abuse, G6PD deficiency, and male gender. The unlikely presentation in our patient was a challenging diagnosis until positive titre returned for RMSF. Rash usually presents late, and it is difficult to appreciate due to the patient’s skin color. The tick carries bacteria and transmits them into the bloodstream, which rapidly multiply within endothelial cells and disseminate through the blood to various areas of the body causing the multi-system disease which can rapidly prove to be fatal if not identified and treated appropriately.

**Abstract 153**

**IS CONCOMITANT STEROID USE AND MORBID OBESITY A RISK FOR PROPOFOL INFUSION SYNDROME?**

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**Case Report** 58 year old morbidly obese African American female with history of end stage renal disease admitted for acute hypoxic respiratory failure due to COVID-19 pneumonia was intubated and placed on ventilator support. Fentanyl for analgesia and Propofol for sedation were the agents of choice. Propofol was initiated at a rate of 58 mcg/kg/min and maintained between 58–60 mcg/kg/min. On day three of admission she was found to have lipid emulsified blood in the CRRT circuit and labs revealed triglycerides 670 mg/dl, CPK 2074 U/L, potassium of 5.3 mmol/L. A diagnosis of propofol infusion syndrome was made and propofol was switched to midazolam. Over the next two days her CPK, triglycerides improved and returned to normal. Patient has multiple risk factors for the suspected propofol infusion syndrome including the dose and duration of infusion, age, obesity, concomitant steroid and vasopressor use.

Although propofol is commonly used in the Intensive Care Units, propofol infusion syndrome is a rare and potentially fatal complication. It is associated with high dose propofol infusion (>83 mcg/kgmin) for a duration of more than 48 hrs. Usual presentation includes metabolic acidosis, elevated triglycerides, rhabdomyolysis, hepatomegaly, bradycardia, AKI, hyperkalemia. It is possibly secondary to impaired tissue metabolism due to inhibition of mitochondrial respiratory chain or fatty acid metabolism. Early diagnosis with a high index of suspicion, avoiding a high rate of infusion and terminating the infusion once diagnosis is established is vital. Hemofiltration is recommended when renal clearance is impaired due to the concomitant AKI which can eliminate metabolites to hasten recovery.

**Abstract 154**

**MEDULLARY AND PAPILLARY THYROID COLLISION TUMOR**

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**Purpose of Study** Papillary thyroid cancer (PTC) and medullary thyroid cancer (MTC) have differing pathologies, histological findings, and clinical presentations. The simultaneous occurrence of both in the same thyroid accounts for less than 1% of all thyroid cancers. The purpose of this case report is to add more data to the English literature about this phenomenon, as there have only been a few cases of this occurrence.

**Methods Used** Not applicable.

**Case Report** A 64-year-old male with a history of COPD was recently diagnosed with PTC presented with acute hypoxemic respiratory failure, dysphagia, weight loss, and hoarseness. Patient was hemodynamically stable on admission requiring supplemental oxygen saturating 98% via nasal cannula. Physical exam was remarkable for non-tender bilateral cervical lymphadenopathy and a palpable, non-tender mass in the right anterior neck; CT neck showed a tumor in the right thyroid extending into the superior mediastinum and eroding into the trachea with cervical metastatic lymph nodes. Labs: TSH 1.19, Ca 8.8, PTH 32.1, CEA 1270, calcitonin 4070. Molecular testing: RET. Initial right neck biopsy exhibited PTC. Immunohistochemistry: positive for PAX8, CK7, CK AE1/3, TTF1 and negative for thyroglobulin.

Left neck lymph node biopsy exhibited MTC. Immunostains: positive for CK7, calcitonin, CD56, chromogranin, synaptophysin, and negative for thyroglobulin. Mass Resection and debulking was not feasible. The patient was referred to an outside facility for tracheal stent placement. He was to undergo radiotherapy and based on molecular testing results, the patient will be started on systemic treatment with selpercatinib.

**Conclusion** The random collision theory provides an answer for the simultaneous occurrence of MTC and PTC. Theory states that two separate, distinct tumors get initiated near one another resulting in a polyclonal neoplasm. Coexistence of these cancers can be seen as mixed tumors or collision tumors. Collision tumors are two histologically distinct tumors that developed in the same site. Due to these rare findings, the clinical outcomes are poorly studied, presenting a diagnostic and treatment challenge.
INTERESTING PRESENTATION OF PITUITARY MACROADENOMA

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Case Report Pituitary tumors present with a diverse symptomatology depending on whether they secrete hormones or cause mass effect. However, 12–37% of pituitary tumors are nonfunctional and present asymmetrically or with minor complaints, making this a particularly challenging diagnosis. Herein, we describe a case of a hormonally inactive pituitary tumor with anatomical compression.

A 70 year old Punjabi male with type 2 diabetes and hypertension presented with altered mental status and fatigue. He had progressive memory decline and reduced mobility for three weeks. He was recently hospitalized and treated for community acquired pneumonia. At our hospital, he had dyspnea and nausea. Physical exam was remarkable for tachypnea. He was euvolemic, and the remaining exam was benign. Labs were notable for serum sodium 126 mmol/L, urine sodium 77 mmol/L, serum osmolarity 267 mOsm/kg, and urine osmolarity 448 mOsm/kg. Though we suspected syndrome of inappropriate antidiuretic hormone secretion (SIADH), patient’s sodium did not improve after fluid restriction. Further workup revealed cortisol 0.33 mcg/dL, ACTH 5.9 pg/mL, TSH 1.26 mcIU/mL, and free T4 0.447 ng/dL.

He was started on stress dose hydrocortisone and levothyroxine for central adrenal insufficiency/critical hypothyroidism. Low LH, FSH, and testosterone indicated central hypogonadism. MRI showed a 1.9 cm pituitary mass with superior displacement of the optic chiasm. Ophthalmology evaluation revealed only bilateral cataracts. Neurosurgery performed a transphenoidal pituitary resection without complications. The patient had symptomatic and clinical improvement post-surgery.

Pituitary tumors present in various ways, and our case demonstrates that a thorough evaluation of nonspecific symptoms may reveal an unexpected diagnosis. SIADH is a diagnosis of exclusion, so it is important to explore other etiologies such as thyroid dysfunction, adrenal insufficiency, or primary polydipsia. Additionally, early identification of pituitary tumors can improve outcome due to their slow-growing nature. Therefore, this is a diagnosis that should not be missed. This case will change our practice in terms of considering uncommon diagnoses like our patient’s nonfunctioning pituitary tumor.

THE IMPACT OF STRESSOR CHOICE ON MEASURING PHYSICAL RESILIENCE: THE ARIC STUDY

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Purpose of Study Physical resilience (PR), defined generally as the ability to maintain or recover function following a stressful event, may present differentially depending on the pairings of stressors and functional measures employed. We examined effects of 3 different stressors on gait speed (GS) resiliency.

Methods Used Among Visit 5 participants in the Atherosclerosis Risk in Communities Study (2011–13: mean age 76.3±3.3 years, 42% male, 24% black), 2,231 (38%) had good gait (GS>1 m/s). Resiliency was defined as maintaining good gait at Visit 5 (V5, 2016–2018) following one of three stressors occurring between V5 and V6: (1) adjudicated heart failure (HF), (2) self-reported hospitalization, or (3) self-reported low social support (lowSS; lack of help with decisions or tasks). Non-resiliency included post-V5 death, (N=162, 7% of those with good V5 gait). Age-adjusted generalized linear models estimated relative rates (RR) of V6 GS>1 m/s, comparing those who experienced a stressor to those who did not.

Summary of Results Of 74 participants with good V5 gait and a HF stressor, 22% maintained good V6 gait (i.e. 22% were GS-HF resilient). Comparatively, 57% of the 1,485 without a HF stressor retained good V6 gait; thus, good gait maintenance was 62% less likely among those with a HF stressor compared to those without, RR=0.38 (95%CI: 0.24, 0.59). GS-hospitalization resiliency was 46% (300 of 646 with any hospitalization had V6 GS>1 m/s) versus 62% (564/913 without out hospitalization), RR=0.75 (0.68,0.83) and GS-lowSS resiliency was 61% (83/136), similar to the 60% (65/1,093) of those not reporting a lowSS stressor, RR=1.02 (0.88,1.17).

Conclusions Pairing different stressors with a particular physical function measure can substantially impact resiliency classifications. Physical resilience studies should heavily consider which specific function-stressor pairings may be optimal. Comparisons of those without intermediary stressors can shed light on the importance of a function-stressor resilience pairing.

A RATHER LARGE HICCUP

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Case Report Lateral Medullary Syndrome (LMS) also known as Wallenberg syndrome refers to occlusion of the posterior inferior cerebellar artery vertebral artery. A characteristic presentation of this condition is loss of pain and temperature sensation on the ipsilateral side of the face and contralateral side of the body. However, it also presents as intractable hiccups, vertigo, Horner syndrome, nystagmus, dysarthria, dysphagia, and ipsilateral ataxia. The mechanism for hiccups in LMS is not well understood and there has been a documented incidence of 56% secondary to lateral medullary infarction.

This is the case of an 80 year old male patient with past medical history of diabetes mellitus type II and hypertension who was brought to the emergency department due to imbalance, difficulty with right upper extremity movement, dizziness, nausea, and hoarseness since about 2 hours prior to arrival. Associated symptoms included hiccups that preceded occurrence of other symptoms and persisted on initial evaluation. The patient was previously independent in all activities of daily living. Physical exam on arrival was remarkable for hoarseness/dysphonia, asymmetric palate elevation, right upper extremity motor strength 4/5, and right dysdiadochokinesias. Vitals were unremarkable. Head CT without contrast was done on arrival and failed to show any acute changes. However, it displayed calcification of the bilateral intracranial vertebral arteries as well as proximal basilar artery. Therefore, suspected etiology of acute stroke was atherosclerotic disease. Given absence of contraindications for tissue plasminogen
activator (TPA) and presentation within window period, TPA was administered. Subsequently, head CTA was done and results showed occlusion of the right intracranial vertebral artery and possible occlusion of the proximal right PICA, compatible with the patient’s history of acute right medullary syndrome.

The diagnosis of lateral medullary syndrome is often encountered and missed by non-neurologists. Therefore, this case serves to bring awareness to the importance and prevalence of this diagnosis and the fact that hiccups should not be undervalued. Persistent hiccups are often encountered and overlooked in the presentation of LMS; however, this could lead to further complications such as aspiration pneumonia, esophagitis, and even respiratory depression.

**158 TAKING CARE OF MONKEY BUSINESS: A CASE OF BABOON SYNDROME**

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**Case Report** Symmetrical drug related intertriginous and flexural exanthema (SDRIFE), also known as Baboon Syndrome given its resemblance to the red buttock of a female Baboon, is an uncommon type of drug-induced eruption. The reaction debuts within hours to days of exposure to the offending drug. Drug-induced cutaneous reactions affect around 2 to 3 percent of hospitalized patients and may represent a significant cause of outpatient morbidity.

An 87-year-old man presented to the emergency department with a diffuse maculopapular rash days after completing therapy for pneumonia. He was admitted to internal medicine ward where dermatology service evaluated the rash and identified it as a Drug eruption secondary to recent Ceftriaxone therapy. They recommended avoiding Ceftriaxone and using topical steroids for itch as needed. During his admission, he developed sepsis secondary to a multidrug resistant Pseudomonas aeruginosa bacteremia sensitive solely to Meropenem. He was started on antibiotics but on his 10th day of therapy, a new rash, visibly different from the first, was observed over inguinal folds and flexural surface. Immunology service was consulted and confirmed the development of SDRIFE secondary to Meropenem. A biopsy was remarkable for dermal eosinophil, lymphocyte and plasma cell infiltrate supporting the diagnosis. Throughout treatment no severe reactions were observed and bacteremia therapy was safely completed. The drug was subsequently discontinued, and supportive therapy provided.

Given his multidrug resistant bacteremia was solely susceptible to the offending agent, Meropenem, the decision to cautiously continue therapy while treating his hypersensitivity reaction resulted in a positive outcome and response. In this particular case, SDRIFE proved not to be a complete contraindication to continuing therapy when concomitant topical corticosteroids were provided. Adverse cutaneous drug reactions may be commonly observed, around 1 in 1000 hospitalized patients suffer serious cutaneous drug reactions. When approaching a drug-induced cutaneous reaction, risks vs benefits of discontinuing or changing therapy must be considered to achieve the best possible outcome in each individual case.
for 3 months, who presented with 5 weeks of intermittent fevers up to 102.7, malaise, productive cough, and dyspnea, with hypoxia on admission, requiring up to 5L O2. Labs showed WBC 10.8, 53% PMNs, CRP 12.9 mg/dL, ESR >80, ferritin 2563, and Na 130. CTA chest showed patchy ground-glass opacities and tree-in-bud nodularity; repeat CT five days later due to ongoing fevers despite cefepime and doxycycline showed worsened diffuse GGO in the bilateral upper lobes and RML. Echo revealed newly reduced EF 35–40% with global hypokinesis. Cardiac MRI showed myocardial edema and transmural enhancement, suggestive of myocarditis.

Infectious workup was unrevealing, including blood and sputum cultures, respiratory viral panel, CMV and EBV DNA PCR, fungal serologies, Q-fever, Bartonella, tickborne serologies, HIV, T-spot, and Legionella. He had two negative PCR, fungal serologies, Q-fever, Bartonella, tickborne serologies, HIV, T-spot, and Legionella. He had two negative NP PCR tests and a negative SARS-CoV-2 antibody test in-house. Late in his course, transbronchial biopsy showed mild nonspecific inflammation with negative stains and cultures. He defervesced, and was discharged on room air after 11 days.

His acute hypoxic respiratory failure was presumed to be due to viral pneumonia and myocarditis. In an allogeneic SCT recipient with respiratory symptoms, various infectious and noninfectious etiologies (GVHD, autoimmune, drug toxicity, etc.) should be considered. Bronchoscopy can provide a more definitive etiology, and was delayed in this case due to some concern for COVID-19 despite multiple negative tests.

Abstract 161 Figure 1 Axial view. Diffuse ground-glass opacity; can be seen with COVID-19 pneumonia, but nonspecific.

HEREDITARY HYPOPHOSPHATASIA IN A 30 YEAR OLD FEMALE WITH CHRONIC BONE PAIN

Case Report Hereditary hypophosphatasia (HPP) is a rare autosomal recessive disorder, characterized by disrupted mineralization of bones and teeth. It is often caused by loss-of-function mutations in the ALPL gene that encodes the tissue-nonspecific isoenzyme of alkaline phosphatase. Symptoms include defective mineralization of bones and teeth, premature loss of teeth, and decreased serum alkaline phosphatase activity. Sever cases may also include fractures, rickets, and respiratory insufficiency. Chronic bone pain is a common symptom, but less specific, and often preceded by gross deformities. Adult onset HPP can be missed, given the uncommon and complex nature of the disease. There have been few reports of HPP presenting in adulthood, which were often mistaken for osteoporosis.

In the current case, the patient was a 29 year old female with a long history of chronic, progressive bone pain who presented to her family medicine physician. As a child and adolescent, her bone pain was classified as growing pain. Her alkaline phosphatase level at the time of the visit was 31 U/L (Reference: 35–147 U/L). She previously had decreased alkaline phosphatase levels intermixed with levels on the low side of the normal range. The bone pain was extremely distressing for the patient and she voiced her concerns to her family medicine physician. He noted decreased alkaline phosphatase levels and discussed possible genetic causes. Genetic testing identified an ALPL gene 571G>A (p. Glu191Lys) mutation, indicating HPP. Since diagnosis, she has had normal DEXA scans, tibial x-rays, and renal ultrasound negative for stones. Her course of treatment has mostly consisted of pain management with tapentadol 200 mg, gabapentin 300 mg, and buprenorphine 10 mcg/hour weekly transdermal patch. Her and her geneticist have discussed treatment with alkaline phosphatase replacement therapy and teriparatide-modified parathyroid hormone that promotes bone growth.

HPP is important to consider in patients with chronic bone pain, regardless of the consistency of alkaline phosphatase levels. It is also imperative to distinguish bone pain compared to pain of muscular origin, as seen with fibromyalgia. Diagnosis of HPP may provide more treatment options with teriparatide and alkaline phosphatase replacement.

ALTERED MENTAL STATUS IN A PATIENT WITH PSYCHIATRIC HISTORY: MEDICATION NONCOMPLIANCE OR MEDICAL ETIOLOGY?
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Case Report An altered mental status (AMS) in patients with a past psychiatric history is often credited to medication noncompliance, substance use, or an exacerbation of their underlying psychiatric illness. Such biases could preclude these patients from necessary medical workups. We illustrate a case of a 58-year-old postmenopausal female whose AMS was initially attributed to medication noncompliance but was ultimately found to have vitamin B12 deficiency due to pernicious anemia.

The patient had visited the emergency room five times over the course of two weeks, presenting each time with a, in total, four-week history of progressively worsening symptoms of nausea, vomiting, weakness, diffuse abdominal tenderness, numbness of the extremities, poor balance, confusion, and memory loss. Her past medical history included hypothyroidism, anxiety with recurrent panic attacks, severe recurrent major depression, chronic pain, and reported polypharmacy. Initially, her symptoms were suspected to be due to her anxiety and withdrawal from polypharmacy—the patient was having difficulty paying for her medications, as her neuropathy impeded her work as a hairdresser. But at this fifth visit, laboratory studies revealed megaloblastic anemia with a
hemoglobin of 9.7. Further workup and physical examination showed a low B12, elevated homocysteine and methylmalonic acid, and decreased sensation to vibration and pinprick. All of these are consistent with a diagnosis of pernicious anemia, and intrinsic factor antibody testing was positive. Our patient’s condition and polyneuropathy improved with monthly vitamin B12 injections.

This case illustrates the critical importance of holistically evaluating patients with AMS so to combat inherent biases against patients with past psychiatric histories. Aside from psychiatric illness exacerbation, the differential diagnosis in this patient population should include both external etiologies, such as toxic ingestion, substance use, and medication noncompliance, as well as intrinsic medical pathology, such as hypoglycemia or, as in this patient, autoimmune induced AMS.

### 164 A DIAGNOSIS THAT REALLY GETS UNDER THE SKIN: A CASE OF PYODERMA GANGRENOSUM

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**Introduction** Pyoderma gangrenosum (PG) is a rare inflammatory neutrophilic dermatosis that varies in presentation; the most common being ulcerative PG. Typically presenting as a rapidly progressive ulcer, ulcerative PG is often misdiagnosed as infection. Pathergy, the provocation of new lesions by trauma, has been described in patients with PG. It must be considered when suspected skin infections are resistant to antibiotics or worsen after debridement. Here we present a case of PG in a patient who failed to improve after numerous antibiotics and multiple surgical interventions.

**Case Report** A 48-year-old female presented to clinic with cellulitis of her left lower extremity several weeks in duration caused by injury from a door. Her wound had progressed from a small erythematous area to a larger necrotic lesion flanked by erythematous skin. She was prescribed Augmentin and Bactrim with no response to treatment. She then presented to the hospital where she was started on intravenous clindamycin and received a debridement. The patient worsened and her antibiotics were broadened to vancomycin and cefepime. The patient’s wound further necrosed, leading to two additional debridements. Surgical cultures were negative for infectious organisms. Clindamycin was reinitiated followed by a fourth debridement. After sustained lack of response to antibiotics, the patient was started on oral prednisone due to concern for an autoimmune process and pathergy. On hospital day 14, pathology from a biopsy showed dense neutrophilic infiltrates associated with pyoderma gangrenosum. After initiating prednisone, the necrosis halted, and granulation tissue began forming. The patient’s wound continued to improve, and she was discharged on oral steroids.

**Discussion** PG is a rare cause of skin ulceration that is commonly mistaken for infectious cellulitis. When confronted by an antibiotic-resistant, necrotizing wound that worsens with debridement, a clinician should always consider a noninfectious process such as PG as prompt treatment may avoid morbidity and complications of prolonged antibiotic therapy, unnecessary surgical procedures, and delayed wound healing.

### 165 NOT ALL LEG EDEMA IS CARDIAC-RELATED: A CASE OF LEG EDEMA SECONDARY TO BREAST CANCER METASTASES

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**Introduction** Bilateral lower extremity (LE) edema is a physical exam finding most commonly seen in patients with heart failure, liver or renal disease, or chronic venous disease. Less commonly, it can be caused by direct compression of LE venous return. Excluding common causes of LE edema is vital to defining the underlying etiology. Here, we report an unusual presentation of LE edema caused by recurrent metastatic breast cancer.

**Case Report** A 57-year-old female presented to the hospital with episodic vomiting. She had a history of right-sided triple-negative breast adenocarcinoma treated with mastectomy, radiation, and chemotherapy. Physical exam revealed bilateral LE edema and left axillary lymphadenopathy of one month in duration. Renal function tests were consistent with pre-renal failure; urinalysis and liver function tests were unremarkable. Her prior chemotherapy regimen included doxorubicin; thus, dilated cardiomyopathy was included as a potential cause of her edema. A chest x-ray revealed bilateral pleural effusions; however, a transthoracic echocardiogram showed a 65% ejection fraction, which was unchanged from prior studies. Additionally, no features of cardiomyopathy were recognized, making it an unlikely cause of the patient’s edema. Abdominal computed tomography showed retroperitoneal adenopathy and infiltration of the right psoas muscle. We hypothesized that the muscular infiltration caused compression on the venous return from the LE. Thoracentesis of the patient’s pleural effusion revealed malignant cells. An excisional axillary lymph node biopsy was performed which showed recurrence of her previous breast adenocarcinoma. Oncology was consulted for further evaluation of the patient’s breast cancer recurrence.

**Discussion** In the right clinical setting, rare causes of bilateral LE edema should be pursued. It is reasonable to consider the associated symptoms, significant clinical history, and physical exam to limit the possible etiologies. Initial workup should focus on excluding cardiac, renal, and hepatic causes. In patients with a strong suspicion for alternative etiology (e.g. with a history of cancer), further workup is warranted.

### 166 OCCULT MULTIPLE MYELOMA UNMASKED BY AN ACUTE KIDNEY INJURY

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**Introduction** Multiple myeloma (MM) is a monoclonal neoplastic proliferation of plasma cells. The most common
presenting features include anemia, bone pain, renal failure, hypercalcemia, and recurrent infections. However, these symptoms are not always present, making the diagnosis of MM more challenging. Here we report an atypical presentation of MM that was unmasked by an acute kidney injury (AKI) secondary to sepsis.

**Case Report** A 67-year-old male with type 2 diabetes mellitus and hypertension presented to the hospital with encephalopathy and urinary incontinence. Initial workup revealed a white cell count of 19.8k, creatinine of 2.21 mg/dL, alkaline phosphatase 210 units/L, and total bilirubin 2.93 mg/dL; hemoglobin and calcium were unremarkable. Blood cultures revealed Klebsiella pneumoniae. Abdominal computed tomography showed diffuse gallbladder wall thickening. Surgery evaluated and treated the patient’s acute cholecystitis via cholecystostomy tube and a 7-day course of ceftriaxone. The patient’s initial decline in renal function was presumed secondary to sepsis in conjunction with his pre-existing comorbidities; however, the patient’s kidney function continued to worsen, resulting in creatinine of 4.79 mg/dL prompting further workup. Fractional excretion of urea was found to be 32.8%, suggestive of pre-renal azotemia, and a 24-hour urine sample revealed nephrotic proteinuria of 3.8 grams. Serum and urine electrophoresis revealed a monoclonal light chain restriction. A bone marrow biopsy showed a neoplasm consistent with MM (>15% plasma cells). Treatment with cyclophosphamide, bortezomib, and dexamethasone was initiated. The patient was discharged with follow-up in hematology clinic.

**Discussion** An AKI is defined as ‘resolving’ if a 25% decrease in creatinine from maximum is seen within 72 hours after diagnosis of the AKI. If injury to the kidney lasts longer than 7 days, it is considered acute kidney disease which warrants further evaluation. In a patient with an AKI unresponsive to treatment, additional causes should be evaluated. Even in the absence of typical clinical findings, MM should be considered in an elderly patient with nephrotic proteinuria and kidney dysfunction out of proportion to the inciting event.

**Allergy/Immunology/Inflammation/Rheumatology**

Joint plenary poster session

4:30 PM

Thursday, February 25, 2021

**RARE CASE OF SYSTEMIC LUPUS ERYTHEMATOUS**

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**Case Report** We present the case of a 33-year-old female with a medical history of gastritis who presented to the emergency department with periorbital swelling, generalized edema, and intractable abdominal pain that have progressively worsened in the last 2 months. Abdominal pain described as an intermittent and epigastric area. Symptoms included weight gain, arthralgia, generalized weakness, and dry skin. Physical examination nonpainful palpable lymphadenopathy on the left axilla, epibulbar area, and anasarca with eye swelling and non-pitting edema. Stable GFR and hypoalbuminemia of 2.7 g/dL. Chest X-ray, TSH, Hepatitis, Syphilis, IgG, and Herpes 8 IgG negative. Urine analysis with no infectious process, with the presence of a protein of 30 mg/dL with urine cast. Collected 24-hour urine protein consistent with 272 mg of protein, ruling out nephrotic syndrome. Therapy with diuretics with the response of generalized edema. Recurrent angioedema episode occurred. At the time, an allergic reaction was suspected, therapy included corticosteroids, antihistamine, and epinephrine with no resolution and requirement of rapid sequence intubation for airway protection. Follow up labs showed leukopenia, hypoalbuminemia, and a new rash with an annular form that affected the abdomen and upper extremity. Other labs show positive ANA 1:40, Low Complement C3 and C4, elevated Sed rate and CRP, positive anti-Smith and anti-RNP. Left palpable axillary node pathology consistent with follicular hyperplasia and prominent plasmacytosis. Bone marrow biopsy normocellular bone marrow, no evidence of metastatic cells, granulomas, or vasculitic skin. Biopsy showed subacute lupus rash, fulfilling SLE criteria as a definitive diagnosis. Also, CH50 12 positive result and C1 Esterase inhibitor pending to assess the acquired nature of her angioedema with and no vasculitis involvement with negative P ANCA and C ANCA and positive Anti-C1 inh antibody for an autoimmune-related type. Hypoalbuminemia consistent with probable Lupus protein losing enteropathy given a recent diagnosis of Lupus with unexplained edema, a urine protein collection of 24 hours less than 0.5 gm, positive ANA pattern, and hypocomplementemia, with the positive response to steroids, still pending for fecal alpha 1 antitrypsin clearance test.
VASCULITIS V.S. THROMBOSIS: A CASE OF ANTIPHOSPHOLIPID SYNDROME

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Case Report

A 38-year-old male smoker presented to our institution with worsening left lower extremity pain for the past week. He reported a gradually worsening left leg pain exacerbated by movement and partially relieved by analgesics. His past medical history was significant for a left pontine infarction 4 years earlier, and a similar episode in his right leg 3 years ago. CT angiography at the time revealed non- opacification of vessels beyond the mid-calf, a picture suggestive of Buerger’s disease, and he underwent right below-knee amputation (BKA). Clinical examination was significant for absent peripheral pulses and cold left foot.

The patient underwent peripheral angioplasty with the restoration of pulsations. Later he started to complain of left hip and foot pain. MRI showed multiple areas of avascular necrosis involving the femoral head, calcaneus, and talus (figure 1).

Buerger’s disease is an inflammatory disease characterized by thrombotic occlusion of distal small and medium-sized arteries and presents with distal limb ischemia in young male smokers. At this time it seemed that there was another underlying pathophysiology. The clinical picture seemed to fit more with a hypercoagulable state rather than vasculitis. A review of his medical records revealed a hypercoagulable workup 4 years earlier that was positive for Lupus anticoagulant (LA). Repeat LA was positive, establishing a diagnosis of antiphospholipid syndrome (APS), and warfarin was started.

APS is an autoimmune disease characterized by venous, arterial or small vessel thrombosis in the presence of LA or autoantibodies including anti-B2 GPI, or anti-cardiolipin antibodies. The mainstay treatment for arterial thrombosis is life-long anticoagulation. The first clue to the diagnosis was the history of CVA, which is unlikely with Buerger’s, the presence of positive LA, and finally, the widespread thrombosis.

SLE PRESENTING WITH ACUTE HEART FAILURE AND TAMPOONADE

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Case Report

Systemic lupus erythematosus is an autoimmune disease characterized by multisystem involvement and the production of autoantibodies. SLE can involve almost any organ; cardiac involvement is one of the lesser-known and frequently overlooked manifestations.

We report a 33-year-old patient with a history of SLE, class V lupus nephritis, and pulmonary embolism. She presented to the ER complaining of 3 days worsening shortness of breath. Labs were significant for leucopenia and a high ESR at 90 mm/hr, serology for SLE showed elevated anti-ds DNA and consumed C3 and C4.

CT showed old pulmonary emboli, and cardiomegaly with a large pericardial effusion and an urgent echo revealed cardiac tamponade and a left ventricular ejection fraction of 20–25% with global hypokinesia. An emergency pericardial window was performed. Cardiac MRI showed no myocardial infiltration or enhancement.

In the setting of a SLE patient, with several clinical and serological markers of lupus activity, pericarditis and myocarditis with heart failure were attributed to a lupus flare. Anti-heart failure measures were initiated, Rheumatology was consulted, and treatment for severe SLE flare was initiated with corticosteroids and cyclophosphamide.

At 3 months follow-up the patient was symptom-free, her TTE revealed an improved EF to 45%. It is important to recognize that pericarditis and myocarditis may be signs of a SLE flare and that treatment includes immunosuppressive therapy in addition to standard anti-failure measures.
Case Report An 18 years old man was admitted with low-grade fever, dry cough, dyspnea, and skin eruptions. Upon admission, he tested positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). A high-resolution computed tomography scan of the chest showed a diffuse bilateral ground-glass opacities consistent with coronavirus disease 2019 (COVID19) interstitial pneumonia.

A pruritic skin rash started 48 hours before admission, 1 day after respiratory symptoms, mostly on his trunk. On
examination, a generalized urticarial skin rash characterized by erythematous, smooth, slightly elevated papules and wheals, associated with severe pruritus was detected. The patient reported neither similar episodes in the past nor allergies to drugs or foods. Further, he had not taken any new medication recently. Dermatology consultation confirmed the diagnosis of generalized urticaria due to COVID19.

White blood cell count was normal (no lymphopenia or lymphocytosis or eosinophilia), C-reactive protein was 12.1 mg/dL, but liver enzymes were normal. Systemic treatment with intravenous dexamethasone, oral hydroxyzine, oral famotidine, in addition to antiviral therapy was started. In the subsequent days, urticaria and his respiratory function improved gradually, and he was discharged on daily loratadine.

A RARE SKIN COMPLICATION OF HYDROXYCHLOROQUINE THERAPY FOR POSITIVE CORONAVIRUS DISEASE 2019 INFECTION: ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS

Case Report A 49-year-old woman with a past medical history of hypertension presented to the emergency department for shortness of breath, low-grade fever, and dry cough. She was tested for COVID-19 and it was positive. Due to normal oxygen saturation, she received a 5-day treatment with oral azithromycin and Hydroxychloroquine (HCQ) 400 mg orally twice daily on the first day, then 400 mg once daily for the next 4 days. 6 days after the completion of the treatment, the patient developed a pruritic rash on her face and neck. Over the next 5 days, she developed widespread erythema, scale, and pustules covering more than half of her body surface area. She had prominent facial and trunk involvement. She complained of fever (38.1°C (100.6°F)), chills, and generalized aches. She had a white blood cell count of 22,700 with a left shift and no eosinophilia. Her septic workup was negative. ESR was 35. Two punch biopsies and swabs of the pustules were taken. The patient was started on intravenous methylprednisolone. Intravenous vancomycin was started empirically with suspicion of bacterial skin superinfection. The patient started to better clinically, and her skin showed evidence of desquamation and healing. Both biopsy reports showed intraepidermal collections of neutrophils as well as subcorneal collections consistent with a diagnosis of acute generalized exanthematous pustulosis. There was no parakeratosis to suggest psoriasis. Finally, the patient was discharged home on a tapering dose of oral prednisone. After 4 weeks, her rash resolved.

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN: A NEW CHALLENGE IN THE COVID-19 PANDEMIC

Case Report Multisystem Inflammatory Syndrome in Children (MIS-C) is a severe inflammatory syndrome temporally associated with the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Although MIS-C is rare, clinicians should have a high index of suspicion in febrile children with evidence of systemic inflammation because prompt intervention is essential. MIS-C affects older children and adolescents and is defined by the CDC as fever, laboratory evidence of inflammation, and multisystem organ involvement in an individual with current or recent SARS-CoV-2 infection or exposure to a suspected or confirmed case within 4 weeks of onset of symptoms. MIS-C causes severe systemic inflammation with complications such as cardiac dysfunction, shock, and even death. This case highlights the diagnosis and management of MIS-C in a healthy child with preceding SARS-CoV-2.

A 7 year old male presented with fever and abdominal pain for one week. Past medical history was significant for SARS-CoV-2 infection diagnosed one month prior. Exam was significant for conjunctivitis and abdominal distention and tenderness, but no mucocutaneous changes or rash. Laboratory studies revealed evidence of systemic inflammation with elevated D-dimer, Ferritin, CRP, and ESR. Chest XR revealed bilateral hilar and basilar opacities with small bilateral pleural effusions. Pro-BNP was elevated. EKG revealed sinus rhythm. Echocardiogram was normal. Presentation was concerning for MIS-C. Although Kawasaki
disease was a consideration, the patient did not meet diagnostic criteria. Multiple pediatric subspecialists were consulted. The patient was treated with supportive care including IV fluids and supplemental oxygen as well as IV Methylprednisolone 500 mg daily for 3 days, Lovenox 0.5 mg/kg twice daily, and Aspirin 45 mg/kg daily. With these interventions, the patient stabilized and defervesced. He was discharged on a Dexamethasone taper, Lovenox for one week, and Aspirin for 6 weeks.

MIS-C is a rare, but severe and potentially life-threatening syndrome. The diagnosis is challenging given the variety of presentations and potential features of other inflammatory or infectious conditions. However, early diagnosis and treatment is crucial to prevent associated morbidity and mortality.

**Case Report**

Transient ischemic attacks, cerebrovascular accidents, and intracranial hemorrhages are a common reason for admission to the hospital. The cause or inciting factor for these events is often not found. Reversible cerebrovascular vasocostriction syndrome (RCVS) is an under-recognized and often misidentified cause of these disease processes (Nesheiwat O, 2020). Described below is a case of RCVS that was misidentified as a Primary Angiitis of the Central Nervous System (PACNS) due to a positive antineutrophil cytoplasmic antibodies (ANCA).

A 57 year old female presented to the emergency department with a one hour history of headache, weakness, facial droop, and slurred speech. She had recently returned from a trip to Utah where she had been hiking at a high elevation, and taking an over the counter multi-symptom sinus medication. Imaging on admission revealed a right basal ganglia hemorrhage with extension into the lateral ventricle, and vascular irregularity in multiple arterial branches posteriorly. Lack of significant hypertension on admission lead to investigation of other causes of the intracranial bleeding. The patient was noted to be ANCA positive with a ratio of 1:80, but testing for complements C3, C4 cryoglobulins, hepatitis, human immunodeficiency virus, rapid plasma reagent, Lyme disease, Rocky Mountain spotted fever, and peripheral smear all without significant abnormality. Positive ANCA with the absence of infection raised concern for primary central nervous system vasculitis. The patient was treated with high dose 1 mg/kg of intravenous methylprednisolone for 4 days, then transitioned to a long taper of oral prednisone starting at 60 mg daily, and discharged.

The patient was then evaluated in the rheumatology clinic for follow up. Further elicitation of history revealed absence of any hemoptysis, nasal crusting, renal disease, uveitis, fever, joint pain/swelling, or rash to suggest small vessel vasculitis which are associated with ANCA positivity. Labs revealed negative ANCA, MPO, and PR-3. It was noted that ANCA does not play a role in the diagnosis of PACNS (Daniel Strunk, 2019). The patient was referred to a vasculitis clinic for a second opinion, and subsequently diagnosed with RCVS due the multiple areas of vasospasm on angiogram.
rash and diagnosed with Henoch-Schonlein Purpura. He presented to an urgent care center and was given a short course of prednisone which helped with the swelling but the rash continued to progress. It initially appeared on the left heel which spread bilaterally upwards towards his waist, associated with bilateral foot and hand swelling. Patient was then seen in the ER with elevated blood pressure (197/111 mmhg), HR (114/min, NSR). On physical examination, palpable rash was evident on anterior surface of lower extremities extending up to the abdomen below the umbilicus. Blood work showed elevated white cell count (15.9), normal Hgb, platelets, BUN and Creatinine. Moderate proteinuria with hematuria was noted on urinalysis. ESR, CRP, ANA, ANCA, Rheumatoid factor, CCP, SSA, SSB, cryoglobulins and HCV serology were within normal limits. Skin biopsy of one of the lesions on left lower extremity showed leukocytoclastic vasculitis. He received IV methylprednisolone 1 g for 3 days and later discharged on prednisone 60 mg/day. Subsequently, he was followed up in the rheumatology office where he was found to have progressive proteinuria.

Full case report and list of references available.

### Abstract 177

**AN ATYPICAL INITIAL PRESENTATION OF DIFFUSE HASHIMOTO ERYTHEMATOUS IN AN ADULT MALE**

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**Case Report**

Systemic Lupus Erythematosus (SLE) is notorious for its diffuse and variable manifestations. Initial presentations of SLE often perplex clinicians, leading to diagnostic and treatment delays. This is especially true in males with atypical presenting symptoms. We herein report a case of a 27-year-old Indian male with no history of SLE who presented to the hospital with one week of dysphagia, myalgia, and a rash. Two months prior to presentation, he was treated for suspected erythema multiforme at an outside hospital and was discharged on a short course of oral steroids. Following admission at our hospital, initial laboratory workup revealed pancytopenia, and after 24 hours, he became hypotensive and tachycardic, with new-onset respiratory distress requiring ICU-level care. A diagnosis of DAH was made with bronchoscopy and serology demonstrated an ANA titer of 1:320, dsDNA of 235 IU/mL, and anti-Smith antibodies greater than 8.0 Al, confirming SLE. Through reporting this case, it is our hope that increased awareness of atypical SLE manifestations may prevent a severe complication, such as DAH, from occurring. It is especially important to maintain high-clinical suspicion for SLE in all patients presenting with diffuse and seemingly unrelated symptoms, regardless of sex and ethnicity.

### Abstract 178

**HASHIMOTO’S THYROIDITIS AND RENAL TRANSPLANT FAILURE**

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**Purpose of Study** Hashimoto’s Thyroiditis (HT) is a common autoimmune disorder of the thyroid and cause of hypothyroidism. The potential effects of HT on long-term renal transplant survival have not been fully examined. To study this, we examined renal transplant patients and compared the time from transplant to failure in patients with and without HT.

**Methods Used** We queried the United States Renal Database for patients initiating end-stage renal disease (ESRD) services between January 1, 2005 and December 31, 2014. Patients aged 18 and older with at least one renal transplant were included. Patients that experienced acute renal transplant failure, defined as rejection occurring within 14 days of initial transplant, were excluded. Kaplan-Meier (KM) estimates of first renal graft survival probability and a multivariable Cox proportional hazards model (CPH) of time to graft failure were used to assess differences in graft survival by HT status.

**Summary of Results** Among the 90,301 patients meeting study inclusion criteria, 144 were identified as having HT prior to renal transplant. Compared to those without HT, HT patients were more likely to be female (77.1% vs. 38.8%; p<0.001), White (85.4% vs. 69.8%; p=0.035), and diagnosed with cytomegaloviral (CMV) disease (27.1% vs. 17.1%; p=0.038). ESRD patients with a HT diagnosis prior to initial renal transplant had a significantly reduced graft life expectancy (p<0.001) and a significantly increased adjusted hazards ratio (aHR) for graft failure compared to those without HT (aHR=1.44; 95% CI 1.05–1.99). An increased risk of graft failure was also associated with being Black vs. White (aHR=1.60; 95% CI 1.54–1.66) and CMV disease (aHR=1.81; 95% CI 1.74–1.88).

**Conclusions** In ESRD patients with renal transplant, a prior HT diagnosis was associated with increased risk of renal graft failure.
failure and reduced graft life expectancy compared to those without HT. Further studies may reveal whether the specific autoimmune mechanism underlying HT or currently unknown factors explain these observed associations between HT and renal transplant failure.

Discussion Systemic Lupus Erythematosus pathology usually reveals non-specific lymphoid follicular hyperplasia, scattered immunoblasts, plasma cells and increased vascularity (2). Inflammatory Pseudotumor of the lymph node has been reported in Rheumatoid Arthritis (3), but its presence in patients with SLE has not been previously reported. The unique finding of IPT in our patient with SLE highlights evaluating for autoimmune conditions that can co-exist.

Introduction Inflammatory Pseudotumor (IPT) of the lymph node is a syndrome of lymphadenopathy characterized histologically as a non-neoplastic proliferation of various cells, here we report a case of IPT associated with SLE.

Case Report A 17-year-old old African American female presented with a 1-month history of subjective fevers, decreased appetite, 20-pound weight loss and lymphadenopathy. Laboratory studies were notable for a white blood cell count 3.9 x10^3ul, hemoglobin 9.6 gm/dl, platelet 401 x10^3ul, absolute neutrophil count 2874ul, erythrocyte sedimentation rate >120(mm/hr), c-reactive protein 3.3 mg/dl and lactate dehydrogenase 795unit/liter (nl <670) with a normal uric acid 3.2 mg/dl. Infectious work-up including Ebstein Barr Virus (EBV), Cytomegalovirus, Bartonella, Tuberculosis and HIV studies did not reveal acute infection. A CT scan of the neck and chest was notable for multiple enlarged cervical, supraclavicular and axillary lymph nodes, and a 5 mm pulmonary nodule. A left supraclavicular lymph node biopsy showed reactive lymphoid hyperplasia with prominent capsular and trabecular fibrosis, fibroblastic and vascular proliferation and mixed inflammatory cell infiltrate including eosinophils and many plasma cells consistent with Inflammatory Pseudotumor. Laboratory studies came back notable for a positive Anti-Nuclear Antibody (ANA) 1:2560 (speckled pattern), anti-double stranded DNA (dsDNA) 61 IU/ml (nl <4), anti-Sjogren’s A (>8), Anti- Smith (>8), Anti-RNP (>8) with negative anti-Sjogren’s B and normal complements 3 and 4 (97 mg/dl and 23 mg/dl respectively). The diagnosis of SLE with Inflammatory Pseudotumor of the lymph node was made. The patient was started on Prednisolone, Hydroxychloroquine and Mycophenolate Mofetil and on follow-up had appropriate resolution of symptoms.

Discussion Systemic Lupus Erythematosus pathology usually reveals non-specific lymphoid follicular hyperplasia, scattered immunoblasts, plasma cells and increased vascularity (2). Inflammatory Pseudotumor of the lymph node has been reported in Rheumatoid Arthritis (3), but its presence in patients with SLE has not been previously reported. The unique finding of IPT in our patient with SLE highlights evaluating for autoimmune conditions that can co-exist.

Case Report Pyoderma gangrenosum (PG) is a rare, sterile, inflammatory neutrophilic dermatosis that is painful with necrotizing ulcerations. It can be idiopathic or in association with systemic disease such as PG, acne, hidradenitis suppurativa (PASH) syndrome. PASH syndrome itself is rare, consists of multiple neutrophilic dermatoses, and is thought to be caused by an underlying genetic predisposition. Due to recurrence and poor healing, treatment for PG ranges from wound care to topical and oral medications to surgical procedures. Usually, a combination of most, if not all, of these therapies are necessary to resolve PG. Some patients, however, are resistant to many of the currently used treatment options and live with debilitating pain and extensive wound care regimens. Human amniotic tissue has been used to treat a variety of wounds over the last century. However, it has rarely been utilized in the setting of treatment resistant PG, with only two other cases reported in the literature to our knowledge. The patient presented in this case developed worsening PG in the setting of PASH syndrome and systemic lupus erythematosus that was refractory to multiple treatment methods. After undergoing four allograft treatments with dehydrated human amnion/chorion membrane (dHACM) (figure 1), the patient began to notice drastic improvements of her PG. This case emphasizes the success of dHACM in treating PG and how it should be considered for patients whose PG does not resolve with more traditional treatments.
A RARE PHEOCHROMOCYTOMA PRESENTATION: PROLONGED QT INTERVAL WITH VENTRICULAR FIBRILLATION CARDIAC ARREST

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Purpose of Study

The purpose of this report is to describe the role of Periodontal Disease (PD) in Coronary Artery Disease (CAD) in a Hispanic country, Puerto Rico.

Methods Used

Literature and Puerto Rican experiences were reviewed and will be discussed.

Summary of Results

PD produces inflammatory disease by bacterial infection in the gingiva. This factor PD activates an inflammatory process affecting the CAD cascade inducing myocytes and endothelial cells to be damaged by this inflammatory process, producing damage to the endothelial lining. The incidence of gingival disease in the Puerto Rican population shows a positive CRP rate of 20% having acute myocardial infarction or variant of other inflammatory diseases. This protein, as well as other cytokines, appears in different conditions producing tissue damage in a Hispanic country.

Conclusions

The acute reactant CRP is a well-known acute inflammatory protein during cardiovascular events as acute infarction and variants of other inflammatory diseases. This protein, as well as other cytokines, appears in 24–45 minutes after the event or exists chronically. The role of statins, ASA and omegas like omega 3 or 7; and other treatments will be discussed as a way to improve these abnormalities reflected as (+) CRP. It is important to check CRP in all P. with periodontal disease to find a population of high risk which attacks the immunological system, including infiltration of monocytes-macrophages system, affecting the coronary circulation and myocardial system.
population (P) in this group is around 40%; of this group 80% will develop periodontal disease, which include bacteria and Cytokines. The product of this process is severe damage to the gingiva, producing an active inflammatory disease, which will activate the cytokines system, reducing IL-10, producing CAD.

Conclusions PD is related to an inflammatory process, which will activate the CAD process, producing tissue infarcts and inflammation. The daily use of resolving and Omega 3 applied to the gingival tissue is useful in the prevention of gingival and periodontal disease, reducing the incidence of CAD and other inflammatory problems. At present the dental and cardiology clinic is attacking aggressively this problem to keep a relatively low incidence of CAD in the Island. This incidence is 20–30% less than in the U.S.A. due to genetic factors and an aggressive program to reduce the inflammation in this population by local application of statins and the omega factors like omega 3 or 7 to the gingival tissue.

184 THE USE COLCHICINE IN ISCHEMIC HEART DISEASE

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Purpose of Study To review the literature and summarize findings of clinical research studies investigating the use of colchicine in stable ischemic heart disease, acute coronary syndrome (ACS) and percutaneous coronary intervention (PCI) with stenting.

Methods Used We identified relevant literature by conducting a search of the databases from PubMed and United States National Library of Medicine clinical trial database (http://www.clinicaltrials.gov) using the terms ‘colchicine’ AND ‘cardiovascular disease’ OR ‘coronary artery disease’ OR ‘acute coronary syndrome’ OR ‘ischemic heart disease’.

Summary of Results Inflammation is a major contributing factor leading to the development and progression of atherosclerosis and ischemic heart disease (IHD) and therefore represents a potential target for treatment with anti-inflammatory drugs. Colchicine is a well-known medication indicated for the treatment for inflammatory diseases such as acute gout and recurrent pericarditis. Various clinical and experimental trials have investigated the activity of colchicine in IHD. The LoDoCo and LoDoCo2 trials studied colchicine in chronic coronary disease and both demonstrated a significant reduction in cardiovascular events as compared to placebo. Studies such as the COLCOT trial showed that colchicine significantly decreased the incidence of future cardiovascular events in patients post ACS. For coronary angioplasty and PCI, colchicine has shown mixed results in trials so far. The encouraging results in recent clinical trials have generated considerable interest in further exploration of the potential indications of colchicine in treating and preventing IHD.

Conclusions Current evidence shows that inflammation is a critical component in the pathogenesis of coronary atherosclerosis. Therapy with colchicine directed against inflammation may have a role in treating and preventing IHD. Future studies are highly anticipated to provide stronger evidence regarding the potential role of this low-cost drug in reducing morbidity and mortality associated with IHD.
EVALUATING EXERCISE RESPONSE VARIABLES OF CHILDREN WITHPECTUS EXCAVATUM

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Purpose of Study Relationship between severity of pectus excavatum and cardiopulmonary changes during exercise.

Methods Used Retrospective review of cardiopulmonary exercise testing of 121 patients aged 0 to 19 with pectus excavatum referred to the exercise physiology laboratory over a 5-year period. Baseline parameters were collected including Haller index and pulmonary function tests. Additional physiologic variables related to aerobic capacity, cardiovascular response, and ventilatory response were assessed with exercise stress testing. These parameters were then compared to the Haller index to see if there was any correlation between patient with a mild/moderate (2.0–3.5) and severe Haller Index (>3.5) using Two-Sample T-Test and Spearman Correlation.

Summary of Results See tables.

Conclusions There is a negative correlation between Haller index and FVC, FEV1, heart rate reserve, and ventilatory reserve. When comparing mild/moderate Haller index to severe there is no significant difference between FVC, FEV1, and heart rate reserve. However patients with a Severe Haller Index tended to have a statistically significant lower ventilatory reserve.

A RARE CASE OF SECKEL SYNDROME PRESENTING WITH COMPLETE HEART BLOCK

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Introduction Seckel syndrome is a rare (<1:10,000 live births) autosomal recessive disorder characterized by facial dysmorphic features and known as Bird-Headed Dwarfism. Only about 100 cases were reported in the literature. We present a case of Seckel syndrome presenting with Complete Heart Block (CHB).

Case presentation A 21-year-old female with Seckel syndrome and epilepsy who presented with status epilepticus. She was hypotensive and bradycardic in the 20s. Labs showed AKI (Creat 0.8, baseline 0.5) with K 6.4. EKG showed CHB. She received IV Calcium chloride, IV Fluids, Dopamine drip, and placed on transcutaneous pacer with no response. A transvenous pacemaker was inserted prior to admission to the PICU given her very small size (57 lb). Electrolytes normalized with persistent CHB. Transthoracic Echo was unremarkable. A suitable permanent pacemaker (PPM) for her size was unavailable at our facility and she was transferred to UTSW Medical
Purpose of Study Sudden cardiac death is a major cause of mortality in the US. Transvenous ICD is traditionally used for the prevention of ventricular arrhythmias. It is also associated with complications like pneumothorax and tamponade. This abstract aims to review subcutaneous ICD (S-ICD) as an alternative with reduced complications.

Methods Used We conducted a Medline search of ‘Subcutaneous,’ ‘ICD,’ and ‘ventricular tachycardia or fibrillation (VT/VF)’ to identify trials published before October 5, 2020, for inclusion in this review. Major practice guidelines, trial bibliographies, and reviews were examined to ensure the inclusion of relevant trials. The following section reviews data from trials to review the efficacy of S-ICD for termination of VT/VF.

Summary of Results The S-ICD system consists of a pulse generator positioned over the sixth rib between the midaxillary and anterior axillary line and a tripolar parasternal electrode with the proximal and distal sensing electrodes positioned adjacent to the xiphoid process and manubriosternal junction. The conversion of the efficacy of the S-ICD after the first shock is 88%-90.1% and 98.2%-100% after 5 shocks based on the current evidence. The device also has a 99% complication-free rate at 180 days. The PRAETORIAN trial showed non-inferiority of the S-ICD to transvenous ICD with device-related complications.

Conclusions S-ICD advantages include no fluoroscopy and decreased complications. The limitations are a lack of pacing abnormalities, increase in inappropriate shocks, and non-reliability with baseline T wave abnormalities. Thus, S-ICD can be considered as an alternative to transvenous ICD in patients with a need for defibrillator therapy but with no need for pacing.
Purpose of Study We aimed to evaluate the incidence of acute myocardial infarction (AMI) in New Orleans in the fourteen years since Hurricane Katrina

Methods Used This was a single-center retrospective study performed at Tulane University Health Sciences Center of patients admitted for AMI during two years before Hurricane Katrina and fourteen years after Hurricane Katrina. The pre-Katrina and post-Katrina cohorts were compared according to pre-specified demographic and clinical data

Summary of Results In the fourteen-year post-Katrina period, there were 3469 admissions for AMI out of a total census of 114,795 (3.0%) compared to 150 admissions out of a census of 21,079 (0.7%) in the 2-year, pre-Katrina group (p<0.001).

The post-Katrina group had a higher prevalence of known coronary artery disease (CAD) (45.9% vs. 30.7%, p<0.001), diabetes mellitus (40.6% vs. 28.7%, p=0.002), hypertension (80.3% vs. 74.0%, p=0.028), hyperlipidemia (56.7% vs. 44.7%, p=0.001), smoking (54.0% vs. 39.3%, p<0.001), drug abuse (18.2% vs. 6.7%, p<0.001), and psychiatric disease (15.6% vs. 6.7%, p<0.001). The post-Katrina group was more often prescribed aspirin (50.1% vs. 31.3%, p<0.001), beta-blocker (47.3% vs. 34.0%, p=0.002), ACE inhibitor or ARB (52.5% vs. 36.0%, p<0.001), and statin (52.8% vs. 28.0%, p<0.001) but with higher medication non-adherence (15.9% vs. 7.3%, p<0.001). The post-Katrina patients were more likely to be unemployed (41.3% vs. 22.7%, p<0.001) and non-married (56.3% vs. 52.7%, p<0.001). Rates of STEMI were lower in the post-Katrina group (28.8% vs. 42.0%, p=0.001). There was no significant difference between the two groups in terms of sex, being uninsured, or prior coronary artery bypass grafting

Conclusions There was a 4-fold increase in the incidence of AMI fourteen years following Hurricane Katrina. Prevalent psychosocial, behavioral, and traditional CAD risk factors were significantly higher among the post-Katrina group. These findings add to the growing body of literature demonstrating adverse cardiovascular outcomes after a natural disaster. Further research is needed to elucidate underlying mechanisms to help mitigate future cardiac morbidity

The aim of this study is to evaluate the rate of abnormal myocardial perfusion imaging (MPI) studies performed during the COVID-19 pandemic compared to its rate prior to the pandemic.

Methods Used We retrospectively studied MPI studies performed during the peak of COVID-19 restrictions at the University of Alabama Medical Center in comparison to the same time period in 2019.

Summary of Results The MPI volume was reduced from 553 per month in 2019 to 105 per month in 2020 (i.e. to 19% of pre-pandemic utilization). The proportion of abnormal MPI for the 2020 cohort (61±13 years, 48% men, 41% black) was not different from the 2019 cohort (62±12 years, 48% men, 42% black) (31% vs. 27%, p=0.4).

Similar proportion of patients in the 2 cohorts had abnormal myocardial perfusion, moderate-large perfusion defects, myocardial ischemia, myocardial scar, and abnormal left ventricular ejection fraction. The proportion of MPIs that were abnormal was not different based on whether patients were evaluated face-to-face or by tele-medicine (28% vs. 27%, p>0.9) but was higher for cardiology providers (40% vs. 20%, p<0.001).

Conclusions There was a significant reduction in the number of MPI studies performed during the peak restrictions from the pandemic. Despite this restriction, the rate of abnormal studies remained stable. Our study suggests that it remains difficult to predict which patients will have abnormal MPI even when providers and stress laboratories are forced to prioritize the performance of studies to high-yield patients.
Abstract 193 Table 1  RAAS Activation

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1 indicates pre-treatment values 2 indicates values after 2 weeks on treatment

EFFECTS OF SEX AND RACE ON GUIDELINE DIRECTED PREDICTORS FOR 30-DAY READMISSION FOR REDUCED EJECTION FRACTION

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10.1136/jim-2021-SRMC.194

Purpose of Study
Recent evidence from the Change the Management of Patients with Heart Failure (CHAMP-HF) registry suggests there are opportunities for initiation/optimization of guideline directed medical therapies (GDMT) including beta blockers (BBs); angiotensin converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), and angiotensin receptor neprilysin inhibitors (ARNIs); and mineralocorticoid antagonists (MRAs) in patients with heart failure with reduced ejection fraction (HFrEF). We examined HF GDMT prescription patterns in a large, tertiary-care medical center to determine whether sex and race affect prescription of these important medications.

Methods Used
This analysis included data from 10,812 adult patients with HFrEF from 2013–2019 from the University of Mississippi Medical Center. All data was extracted from the electronic medical record Patient Cohort Explorer. We examined prescription patterns of GDMT for HFrEF patients by sex and race, including ACEIs/ARBs, ARNIs, HF BBs, and MRAs.

Summary of Results
Among included HFrEF patients, 41.3% were women and 59.6% were black. These patients were insured primarily by Medicare/Medicaid (62.2%) and private insurance (13.8%), while 21.8% had no insurance coverage. Overall, we found suboptimal rates of HF GDMT prescription: 53.2% on ACEIs/ARBs, 9.6% on ARNIs, 62.2% on BBs, and 24.8% on MRAs. We noted higher percentages of black patients with HFrEF were on BBs (66%) and MRAs (28%) in comparison to white patients with HFrEF (56.7% and 20.2%, respectively). Men with HFrEF had higher prescription rates of HF GDMT. This difference was most pronounced with BB prescriptions – 64.3% in men versus 59.2% in women.

Conclusions
Our institution appears to have significant opportunities for initiation of Class I indicated GDMT for HFrEF. Despite some differences noted with regard to sex and race, the overall prescription rates are lower than 70%. Suboptimal prescriptions rates were especially pronounced with ARNIs and MRAs. While some patients could have contraindications to some of these therapies, there is likely a large proportion without contraindications not on GDMT for HFrEF.

PREDICTORS FOR 30-DAY READMISSION FOR RECURRENT SYNCOPE

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10.1136/jim-2021-SRMC.195

Purpose of Study
Syncope is a common medical problem with 18.1–39.7 episodes per 1000 patients.1 Prior analyses have estimated the 30-day readmission to be at 9.3%.2 The causes and predictors for recurrent syncope readmission are unclear. Since recurrent syncope is the most common cause of readmission, we sought to determine the factors that predict these readmissions.

Methods Used
We utilized the Nationwide Readmission Database to identify admissions with a principal diagnosis of Syncope (ICD-9 780.2). Applicable admissions were all adults (age ≥ 18) from January 1 to November 30, 2014. All-causes including syncope readmissions (either as principal or secondary diagnosis) within 30-days of an index syncope admission were analyzed. Readmission predictors were determined using a multivariate logistic regression model following sequential step-wise elimination of covariates.

Summary of Results
A total of 63,282 patients were admitted for syncope. There were 6,320 readmissions (9.99%) within 30-days of index admission. Of readmissions, 17.53% were readmitted for recurrent syncope. The Length Of Stay (LOS) for those readmitted was 2.97 days (Confidence Interval, CI 2.81–3.13) while those not readmitted was 2.67 days (CI 2.65–2.69) which was statistically significant (p<0.001). The statistically significant predictors of recurrent syncope readmissions were leaving Against Medical Advice (Odds Ratio [OR] 2.11, 95% CI 1.63–2.76), discharge to short term hospital (OR 3.75, CI 2.49–5.64), Age 18–35 (OR 1.89, CI 1.33–2.68), metropolitan (> 1 mill.) hospitals (OR 0.75, CI 0.63–0.90), female gender (OR 0.85, CI 0.75–0.96) and private payers (OR 0.78, CI 0.63–0.97). Income quartile and the presence of comorbidities such as obesity or Chronic Kidney Disease (CKD) did not influence readmission.

Conclusions
While syncope has a 10% 30-day readmission rate, 1/6 patients will be readmitted for recurrent syncope. Provider awareness of predictors of recurrent syncope may allow for the development of interventions to decrease the rate of readmissions.

6500 ± 2718 pg/mL, renin 58 ±15 mg/mL/hr, aldosterone 182 ±138 ng/dL, urine Na 12.4 ±9.4 mmol/L, and urine K 27.7 ±15.3 mmol/L.

Conclusions
Our study demonstrates that HF leads to persistent hyperaldosteronism secondary to RAAS activation despite 2 weeks of medical treatment. This pilot data can be used to guide a multicenter study to further investigate the role of RAAS activation in HF.
Purpose of Study: This abstract aims to outline the current major interventional treatments for pulmonary embolism through 2020.

Methods Used: We conducted a Medline search of 'interventional pulmonary embolism treatment' to identify pivotal trials published before May 15, 2020 for this review of the latest modalities for treatment of pulmonary embolism (PE).

Summary of Results: While the cornerstone of treatment for PE is anticoagulation, more aggressive therapies are increasingly being developed and used to treat high-risk PEs, including systemic thrombolysis, catheter-directed thrombolysis (CDL), ultrasound-assisted thrombolysis (USAT) and mechanical thrombectomy (MT). Systemic thrombolysis is effective but has increased risk of major bleeding. Conversely, CDL, USAT, and MT use alternative devices for treating for high-risk PEs. CDL and USAT involve catheter-directed injection of a thrombolytic drug, and MT uses catheter-directed aspiration of thrombus. Our study provides an in-depth overview of all devices in use, their research trials, and each device's indications, advantages, and disadvantages.

Conclusions: Interventional devices have shown promising results in treatment of high-risk PE's. In particular, the EXTRACT-PE trial and subsequent FDA approval of the Indigo Thrombectomy System is a major recent development. Its small size, ease of delivery to pulmonary arteries and low adverse event rate make it arguably the best overall device to date. However, clinical trials for catheter-based devices so far have been limited to mostly single-arm studies measuring short-term surrogate outcomes. These studies offer a preliminary evaluation of the safety and efficacy of devices but are not sufficient to stratify risk and guide clinical practice. Large RCTs are needed to fully examine these risks and long-term outcomes and to create a more clear and specific set of guidelines for use of these devices.

Purpose of Study: The Norwood operation for single ventricle lesions is one of the most complex congenital heart surgeries with a mortality of 22% postoperatively, and 75% of children having at least 1 post-operative complication. Acquiring sepsis after the Norwood operation increases mortality by 13%. The aim of this study was to examine the performance of machine learning approaches to predict positive-culture sepsis in children with a single ventricle lesion.

Methods Used: A secondary data analysis of children from the Pediatric Heart Network Single Ventricle Reconstruction Trial. A total of 549 individuals from multiple cardiac intensive care units around the world were included. The outcome was culture-proven sepsis evaluated between the Norwood and Glenn procedure. In the training set (70% random sample), using demographic, clinical, and surgical predictors, we derived three machine learning models: logistic regression, extreme gradient-boosted decision tree, and k-nearest neighbors. We measured the models' prediction performance by computing C statistics in the remaining test set (30% random sample).

Summary of Results: Fourteen percent (n=78) of children were diagnosed with sepsis [mean (SD) gestational age, 38.1 (1.6) weeks; 61.9% male; mean (SD) age at Norwood, 6.8 (4.1) days]. Extreme gradient-boosted decision tree had the best C-statistic for predicting sepsis at 81.6% (CI 0.718 - 0.914). Logistic regression and k-nearest neighbors had a C-statistic of 59.1% and 74.0%, respectively. Age at discharge was the top predictor followed by echocardiographic measures of right ventricular function, intraoperative variables, and demographic features.

Conclusions: Machine learning-based predictors can help clinicians determine which children with single ventricle lesions are at highest risk of developing sepsis after the Norwood operation.

Purpose of Study: The coronavirus disease-2019 (COVID-19) pandemic has been associated with varying mortality. Racial disparities and underlying medical conditions appear to play a role.

Methods Used: We retrospectively analyzed data from a large academic medical center in Mississippi using the electronic health record Patient Cohort Explorer. We evaluated differences in mortality rates among racial groups, between sexes, and based on a diagnosis of prevalent atherosclerotic cardiovascular disease (ASCVD). Multivariable regression models were performed to assess the differences and odds of dying due to COVID-19 by race and ASCVD status.

Summary of Results: Among 804 adults aged ≥19 years admitted to the University of Mississippi Medical Center with COVID-19 from 3/14/2020 to 9/14/2020, 521 (65%) were Black, 153 (19.1%) were White and 54 (6.7%) were American Indian or Alaska Native (AI), and 151 (19.8%) patients had ASCVD. In patients without ASCVD, mortality rates were similar between Black and White patients (13.2 vs 15.1%, respectively), but were higher in Als (37.8%). Mortality rates were also similar between Black and White patients with ASCVD (33.7 and 37.8%, respectively) but higher in Als with ASCVD (55.6%). Patients with ASCVD had higher mortality rates compared to those without ASCVD (36.4 vs 14.9%, respectively). After adjustment for age and sex, the odds of dying
was significantly higher among AIs (OR 4.93 p<0.001). ASCVD was also associated with increased likelihood of mortality in patients with COVID-19 (OR 3.36 p<0.001), irrespective of race.

Conclusions In a large academic medical center, AIs had about 5-fold increased risk of dying from COVID-19 and a diagnosis of ASCVD also presaged increased mortality in patients with COVID-19. Based on our findings, physicians should have a heightened awareness of risk of dying from COVID-19 in AIs and those with underlying ASCVD.

**EVALUATION OF GLUCOSE TOLERANCE TEST IN GUANYLYL CYCLASE/NATRIURETIC PEPTIDE RECEPTOR-A GENE-TARGETED MUTANT MICE**

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10.1136/jim-2021-SRMC.199

**Purpose of Study** Atrial natriuretic peptide (ANP) acting through the guanylyl cyclase/natriuretic peptide receptor-A (GC-A/NPRA), plays pivotal roles in the regulation of blood pressure and cardiac homeostasis. The disruption of the Npr1 (encoding GC-A/NPRA) in mice exhibits hypertension and provokes renal and congestive heart failure; however, the underlying mechanisms are not yet precisely determined. The objective of present study was to investigate whether Npr1 gene plays a critical role in regulating glucose homeostasis in Npr1 gene-disrupted haplotype and gene-duplicated mice.

**Methods Used** The adult male (14–18 wks) Npr1 gene-knockout haplotype (Npr1<sup>−/−</sup>, 1-copy), wild-type (Npr1<sup>+/+</sup>, 2-copy), and gene-duplicated (Npr1<sup>+/−</sup>, 4-copy) mice were fasted overnight (16 h) and given free access to water. The mice were administrated with glucose both orally and intraperitoneally (2 g/kg body weight) to determine oral glucose tolerance test (OGTT) and intraperitoneal glucose tolerance test (IPGTT). Blood glucose levels were determined by performing tail bleeds at 0, 15, 30, 60, 90, and 120 min using the AlphaTRAK blood glucose monitoring system.

**Summary of Results** The results showed that administration of glucose resulted in a greater increase in blood glucose levels at 120 mins in 1-copy mice (OGTT: 237 ± 5 mg/dL, IPGTT: 246 ± 6 mg/dL) than 2-copy male (OGTT: 113 ± 3 mg/dL, IPGTT: 126 ± 6 mg/dL), respectively. The blood glucose was also significantly lower in 4-copy mice (OGTT: 113 ± 5 mg/dL, IPGTT: 108 ± 7 mg/dL) compared with 2-copy mice. Sys- tolic blood pressure (SBP) was determined by non-invasive tail-cuff method (Visitech 2000). SBP was significantly greater in 1-copy mice (130 ± 4 mmHg) than 2-copy mice (100 ± 3 mmHg). Similarly, SBP was also significantly lower in 4-copy mice (90 ± 2) than 2-copy mice. The increase in plasma glucose levels were significantly lower in OGTT than IPGTT.

**Conclusions** These results revealed that Npr1 gene markedly prevented a steep rise of blood glucose levels after glucose challenge and ameliorated glucose intolerance in wild-type 2-copy and gene-duplicated 4-copy mice than haplotype 1-copy mice, suggesting that glucose homeostasis might be regulated by Npr1 gene.

**RACE IS NOT A PREDICTOR OF MAJOR CARDIOVASCULAR EVENTS OR MORTALITY IN COVID-19 PATIENTS**

H Nguyen*, F Ikram, N Nguyen, C Patel, P Acharjya, A Dhillon, M Sidhu. Methodist Health System, Dallas, TX

10.1136/jim-2021-SRMC.200

**Purpose of Study** To determine if race is linked with higher rates of MACE and/or mortality in patients hospitalized for COVID-19.

**Methods Used** Our retrospective observation cohort study analyzed 496 hospitalized patients to determine if race was a predictor for poorer outcomes (MACE or death). Data was obtained from review of the electronic medical records of de-identified patients that tested positive for COVID-19. Statistical analysis using Pearson’s chi square test was used to compare race with incidence of MACE or death.

**Summary of Results** Out of the 484 patients that had data available on race, 132 (37.39%) were Black or African American, 87 (24.65%) were white or Caucasian and 134 (37.96%) were other ethnicities. No significant association was observed between race and higher risk for MACE or death in COVID-19 patients (p-value = 0.878).

**Conclusions** While African Americans make up a larger demographic of hospitalized COVID-19 patients, they are just as likely as any other race to have MACE or death. Our study shows that race does not affect the rate of MACE or death.

**ELEVATED BODY MASS INDEX IS NOT ASSOCIATED WITH INCIDENCE OF MAJOR ADVERSE CARDIOVASCULAR EVENTS OR DEATH IN COVID-19 PATIENTS**

H Nguyen*, F Ikram, N Nguyen, C Patel, P Acharjya, A Dhillon, M Sidhu. Methodist Health System, Dallas, TX

10.1136/jim-2021-SRMC.201

**Purpose of Study** To determine if elevated BMI is associated with higher rates of major adverse cardiovascular events (MACE) and/or mortality in patients hospitalized for COVID-19.

**Methods Used** Our retrospective observation cohort study analyzed 496 hospitalized COVID-19 patients to determine if elevated BMI is associated with MACE and/or mortality. Data was obtained from review of the electronic medical records of hospitalized COVID-19 patients. A two-sample Wilcoxon rank-sum (Mann-Whitney test) was used to compare BMI to worse outcomes. The Fisher’s exact test was used to compare the BMI categories with worse outcomes. MACE was defined as a composite of myocardial infarction, deep venous thrombosis pulmonary embolism, stroke or shock requiring vasopressor support. BMI categories were as follows: Underweight (BMI<18.5), Normal (BMI 18.5 to <25), Overweight (BMI 25 to <30), and Obese (BMI>30).

**Summary of Results** Out of the 495 patients with BMI data available, 358 (72%) did not have MACE or death and 137 (28%) had MACE or death (p = 0.5126). Examination of outcomes based on BMI category found that 0.56% of underweight patients did not have MACE or mortality versus 2.19% with worse outcomes, 19.55% of normal BMI patients did not have worse outcomes versus 21.17% with MACE or...
mortality. 32.68% of overweight patients did not have worse outcomes versus 29.93% with worse outcomes, and 47.21% of obese patients did not have worse outcomes versus 46.72% with worse outcomes (p = 0.392).

Conclusions Our study shows that obese patients were not as likely to develop MACE or death compared to patients with normal or low BMIs. Furthermore, patients in higher BMI categories were not as likely to experience MACE compared to those in lower BMI categories. In conclusion, the incidence of MACE and mortality in COVID-19 positive patients is independent of obesity and BMI.

Purpose of Study Hypertension in pregnancy has been associated with increased risk for end-stage kidney disease; however, there are limited data assessing the relationship between hypertensive diseases in pregnancy and kidney function later in life.

Methods Used We evaluated kidney function in 725 women of the Genetic Epidemiology Network of Arteriopathy (GENOA) study. Women were classified by self-report as nulliparous (n=62), a history of normotensive pregnancies (n=544), a history of hypertensive pregnancies (n=102), or a history of preeclampsia (n= 17). We compared adjusted associations among these 4 groups with measured (iothalamate clearance) and estimated (Cystatin C) GFR measurements of kidney function using generalizability estimating equations to account for familial clustering.

Summary of Results Among women with renal function measurements (mean age 59 ± 9 years, 53% African American), those with a history of hypertensive pregnancy had lower GFR (iothalamate urinary clearance: β-coefficient,-4.66 ml/min/1.73 m², 95% CI -9.12, -0.20) compared to women with a history of normotensive pregnancies. Compared to women with a history of normotensive pregnancies, women with a history of hypertensive pregnancy had greater odds of GFR < 60 ml/min/1.73 m² by iothalamate urinary clearance (OR 2.09, 95% CI 1.21,3.60). Additionally, women with a history of hypertensive pregnancy had greater odds for chronic kidney disease (OR 4.89, 95% CI 1.55, 15.44), after adjusting for risk factors.

Conclusions A history of hypertension in pregnancy is an important prognostic risk factor for kidney disease several years later.

Purpose of Study

This abstract aims to review alternatives to conventional cigarettes, and their impact on cardiovascular health.

Methods Used

We conducted a Medline search of ‘E cigarettes,’ ‘Smokeless tobacco,’ ‘hookah,’ and ‘cardiovascular risk’ to identify pivotal trials published before May 10, 2020, for inclusion in this review. Major practice guidelines, trial bibliographies, and pertinent reviews were examined to ensure inclusion of relevant trials. The following section reviews data from pivotal trials to review the effects of E cigarettes, smokeless tobacco, hookah, nicotine replacement therapy on cardiovascular health.

Summary of Results

E cigarettes are associated with increased risk of atherosclerosis leading to myocardial infarction, stroke as well as arrhythmogenic property of the cigarettes have been noted. E cigarettes also lead to vaped associated illness which can culminate into acute respiratory distress syndrome. Hookah use leads to increased smoke inhalation even compared to cigarettes. Evidence points towards higher risk of CAD among hookah users. Though initial evidence for smokeless tobacco products like ‘snuff’, ‘snus’, or chewable tobacco did not show any association, recent and emerging research shows increased in MI and cardiovascular mortality. The only cigarette alternative that remains safe from a cardiovascular perspective are nicotine Replacement therapy.

Conclusions

The abundance of evidence regarding alternatives to conventional cigarette’s impact on cardiovascular mortality and morbidity does not position it as a safe alternative, but an alternative means of smoking nicotine. The humongous rise in popularity and its gain in favor among the younger population poses a serious threat to the cardiovascular well-being of the exposed. Thus, E cigs and other alternatives of cigarette smoking do impart differing risks in cardiovascular mortality and morbidity, with the possible exception of nicotine replacement therapy.

Abstract 203 Table 1

Cardiovascular impact by conventional tobacco cigarettes alternative.

<table>
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<tr>
<th>Tobacco cigarette alternative</th>
<th>Cardiovascular impact</th>
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<td>E cigarettes</td>
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<td>Alzahrani T Et al., 2018</td>
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<td>Nicotine replacement therapy</td>
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Abstracts
**THE PREVALENCE OF PATHOLOGIC Q WAVES IN PEDIATRIC PATIENTS WITH CONFIRMED HYPERTROPHIC CARDIomyOPATHY: A SYSTEMIC REVIEW OF THE LITERATURE**

K Singhapakdi*, L Mellick. University of South Alabama, Mobile, AL

**Purpose of Study**
The electrocardiogram (ECG) of patients with hypertrophic cardiomyopathy (HCM) ranges from normal to exhibiting evidence of ventricular hypertrophy, a classic finding being deep Q waves in the inferior and lateral leads. However, the prevalence of this finding in pediatric HCM patients is not well-established. The purpose of this review is to describe the prevalence of pathologic Q waves in pediatric patients with echocardiogram proven HCM.

**Methods Used**
PubMed, Web of Science, Scopus, and CINAHL were searched using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) format. The Rayyan Systemic Review Software was used to screen for final review. The initial search (Search 1) consisted of the following terms: ‘dagger Q wave’, ‘dagger-like Q waves’, ‘dagger shape Q waves’, ‘deep Q wave’, ‘narrow Q wave’, ‘Q wave elevation’ and ‘hypertrophic cardiomyopathy’. A broader search (Search 2) was conducted using the same terms except ‘hypertrophic cardiomyopathy’. The authors then reviewed the articles these searches yielded as well as the references of the articles.

**Summary of Results**
This yielded 9 articles that specifically addressed the prevalence of pathological Q waves in pediatric HCM patients. The articles described a total of 845 pediatric patients with hypertrophic cardiomyopathy. Of these, 258 (30.5%) demonstrated pathological Q waves on their electrocardiograms. The range of percentages reported for pathological Q waves was 12.5–66.7%.

**Conclusions**
Our systematic review confirmed that pathologic Q waves are a common and early finding in children with HCM and may sometimes be the only ECG finding.

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**INCIDENCE OF MAJOR ADVERSE CARDIOVASCULAR EVENTS IN COVID-19 INFECTED PATIENTS AT A MAJOR SOUTHWEST METROPOLITAN QUATERNARY CARE HOSPITAL**

CD Ukoha*, M Sidhu, FG Ikram, C Patel, N Nguyen, H Nguyen, L Hoang, P Acharya. Methodist Dallas Medical Center, Dallas, TX

**Purpose of Study**
The world reached over eight million cases of COVID-19 in June 2020. There are several unknown cardiovascular manifestations of COVID-19, specifically major adverse cardiovascular events (MACE). The purpose of this study is to identify the incidence of MACE within the COVID-19 infected patient population hospitalized in a major Southwest metropolitan quaternary care hospital.

**Methods Used**
A total of 496 patients tested positive for COVID-19 from March 2020 to June 2020 at a major Southwest metropolitan quaternary care hospital. Electronic medical records of these cases were reviewed to identify any evidence of MACE. MACE was defined as a composite of myocardial infarction, stroke, deep venous thrombosis/pulmonary embolism or shock requiring vasopressor support.

**Summary of Results**
In this single-center retrospective study, all 496 patients who tested positive for COVID-19 and were hospitalized were included. The mean age of the patients was 58.2 (SD=14.5) years, with 39% of the patients between 40 and 60 years of age. More than 70% of the patients were African American or a race other than White. Overall, 122 of the 496 patients developed a MACE during hospitalization. 493 patients had at least one of the following comorbidities: hypertension, diabetes, chronic obstructive pulmonary disease (COPD), asthma, or obesity (BMI>30). 82 patients had hypertension, 20 patients had COPD or asthma, and 59 patients had a BMI greater than 30. Of the 122 patients who developed a MACE, 83.2% did not have COPD or asthma. Forty-nine (40.1%) of the COVID-19 infected patients had a MACE or expired during hospitalization.

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[Diagram/Graph: Flowchart showing the search process with numbers and labels]
Conclusions This study revealed that a substantial percentage of COVID-19 patients developed a MACE during admission, and most of these patients did not have an underlying lung condition including COPD or asthma. Despite studies indicating a higher risk of complications in obese patients with COVID-19, only half of the COVID-19 population with MACE had a BMI >30.

ANGIOTENSIN II TYPE 2 RECEPTOR REGULATES SKELETAL MUSCLE STEM (SATELLITE) CELL DIFFERENTIATION AND POTENTIATES MUSCLE REGENERATIVE CAPACITY VIA GSK-3β/β-CATENIN PATHWAY: IMPLICATIONS FOR TREATMENT OF CACHEXIA AND SKELETAL MUSCLE WASTING

T Yoshida*, P Delafontaine. Tulane University, New Orleans, MO 10.1136/jim-2021-SRMC.206

Purpose of Study Patients with advanced congestive heart failure (CHF) or chronic kidney disease (CKD) often have increased angiotensin II (Ang II) levels and cachexia. We previously demonstrated that Ang II type 2 receptor (AT2R) potentiates skeletal muscle stem (satellite) cell (SC) differentiation. However, AT2R expression is suppressed in Ang II-mediated muscle atrophy, suggesting the involvement of AT2R signaling. We aimed to identify the downstream signaling of AT2R in SCs, and to assess its role in skeletal muscle regeneration and atrophy.

Methods Used AT2R downstream signaling pathways were analyzed in AT2R knockdown cells by phosphoprotein array. The identified signaling pathway was pharmacologically and genetically manipulated both in vitro and in vivo, and the skeletal muscle regenerative capacity was analyzed by qRT-PCR, western blotting and immunohistochemistry. Also, AT2R-overexpressing transgenic animal was generated and the changes in SC signaling was analyzed.

Summary of Results We found that 20 phosphoproteins were upregulated (>1.4 fold change) and 28 were down-regulated (<0.7 fold change) in SCs after AT2R knockdown. The analysis indicated an involvement of Akt/GSK-3β/β-catenin pathway, and β-catenin TCF/LEF reporter (TOPFlash) assay showed an increase in β-catenin activity both in vitro and in vivo during SC differentiation. AT2R knockdown in cultured SCs significantly inhibited Akt/GSK-3β/β-catenin pathway, and importantly, decreased SC differentiation. In transgenic mice that overexpress AT2R specifically in SCs, muscle regeneration is potentiated in association with increased Akt/GSK-3β/β-catenin pathway. Furthermore, pharmacological activation of Akt/GSK-3β/β-catenin pathway restored SC regenerative capacity both in vitro and in vivo after AT2R knockdown. Importantly, Ang II-induced decline in muscle regenerative capacity and muscle atrophy development were both prevented by AT2R overexpression and activation of Akt/GSK-3β/β-catenin pathway in vivo.

Conclusions These data indicate that AT2R/Akt/GSK-3β/β-catenin pathway plays a critical role in regulating SC differentiation and muscle regeneration, and could be a novel therapeutic target in wasting disorders such as CHF and CKD.

PARADOXICAL HYPOTENSION AND PULMONARY EDEMA AFTER SURGICAL PERICARDIOTOMY FOR CARDIAC TAMponade: AN UNDER-REPORTED COMPLICATION TO ANTICIPATE

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Case Report Pericardial decompression syndrome (PDS) is a rare and serious complication that ensues after often-initially uncomplicated pericardial drainage in patients with pericardial effusion and tamponade physiology. Here we report a case of PDS in a 70-year-old male with end stage renal disease (ESRD) who underwent surgical pericardial window for drainage of a moderate pericardial effusion with tamponade physiology. After presenting with severe dyspnea, hypoxia and hypotension, his vital signs initially improved after drainage of pericardial fluid. Few hours after surgery patient developed pulmonary edema and hemodynamic instability requiring intubation, mechanical ventilation and vasopressor support. Compared to his normal Echocardiogram 2 months prior to this hospitalization, an Echocardiogram done in the ICU postoperatively showed moderately reduced left ventricular ejection fraction 30–34%, with apical, lateral and inferior wall hypokinesis, significant right ventricular systolic dysfunction, and paradoxical ventricular septal wall motion. EKG showed no acute ischemic changes, cardiac biomarkers were only mildly elevated in the setting of ESRD. A diagnosis of pericardial decompression syndrome was made. Vasopressors were weaned gradually over a duration of 5 days, patient was extubated, his fluid status improved with continuous renal replacement therapy, he was transferred to the stepdown unit and later discharged 13 days after admission.

A follow-up Echocardiogram 6 months after discharge showed normalization of his left ventricular systolic function with ejection fraction estimated at 50–54%.

This case provides further evidence that rapid pericardial decompression, notably with pericardiectomy, can lead to acute life-threatening low cardiac output heart failure, particularly in patients with underlying cardiac risk factors. Early recognition, diagnosis and supportive treatment in the intensive care unit is crucial for improving survival.

A CASE OF PEMBROLIZUMAB INDUCED COMPLETE HEART BLOCK

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Case Report Pembrolizumab is a monoclonal antibody directed towards programmed cell death protein 1 (PD-1). It is commonly used in the treatment of non-small cell lung cancer. It’s associated with multiple immune-related side effects. Here, we present a case of complete heart block (CHB) 14 days after pembrolizumab administration.
Case Presentation A 57-year-old female patient known to have metastatic non-small cell lung cancer presented with syncope. She was started on treatment for non-small cell lung cancer nine months before the presentation to the ED. Initially, she received induction with cisplatin and pemetrexed, then pemetrexed as maintenance therapy with a good partial response. However, her disease progressed. Only three percent of the patient’s tumor cells expressed PDL-1. Therefore, the patient was started on pembrolizumab 14 days before her presentation. Upon presentation to the ED, her electrocardiogram (EKG) showed a CHB. Her previous EKG was normal sinus. The troponin level was trended, and it was normal. A temporary pacemaker was inserted. Coronary angiography was done, and it showed normal coronary vessels. The patient was started on high dose corticosteroids. However, after seven days, she was still in CHB. Therefore, a permanent pacemaker was inserted.

Discussion Pembrolizumab immune-related side effects have commonly been reported in the literature e.g., thyroiditis, hepatitis, hypophysitis, pneumonitis, etc. Although it is rare, cardiovascular complications have been reported as a side effect of pembrolizumab therapy. It might cause arrhythmias, pericarditis, myocarditis, pericardial effusion, and tamponade. CHB is a rare complication following pembrolizumab therapy. Various proposed mechanisms have attempted to explain immune checkpoint inhibitor-mediated arrhythmias. Some of these theories include ventricular myocarditis with inflammation and fibrosis or inflammation of the His-Purkinje conduction system, leading to re-entry arrhythmia. Atrial or ventricular arrhythmias secondary to inflammation without myocarditis and atrial and ventricular arrhythmias from functional cardiotoxicity without inflammation are other possibilities.

209 CONCURRENT ACUTE CORONARY SYNDROME AND ACUTE INFECTION: A CASE REPORT

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Case Report

Introduction An increase in the short- and long-term risk of myocardial infarction (MI) in the setting of acute infections is well described in the literature. We present a case of concomitant acute MI and acute cholecystitis. The latter was diagnosed following the persistence of abdominal pain after successful stenting.

Case presentation A 41-year-old man with hypertension and recently diagnosed Inflammatory Bowel Syndrome presented with severe epigastric pain radiating to the interscapular area of 3 hours duration, associated with diaphoresis, nausea, and vomiting. His vital signs were normal, except for a heart rate of 49. EKG showed sinus bradycardia and ST-segment elevation in leads II, III, and aVF. He was rushed to the cardiac catheterization lab and was found to have an 80% lesion with a high thrombus burden in the proximal RCA. A stent was successfully placed. Following the procedure, he reported persistence of the abdominal pain. Murphy’s sign was positive. Repeat EKG showed resolution of the ST-segment elevations with no new changes. A gallbladder ultrasound showed acute calculous cholecystitis. Since the patient was on dual antiplatelet therapy, surgical management was not possible, and he was medically managed with antibiotics. He was given seven days of intravenous piperacillin-tazobactam, followed by seven days of oral amoxicillin-clavulanate. The patient was last seen three months following discharge, and he was doing well and pain-free.

Discussion The patient presented with acute MI and cholecystitis. It is essential to stay vigilant of the association between acute infections and MI. This is thought to be related to the prothrombotic and procoagulant states triggered by infections, such as enhanced platelet activation. Additionally, atherosclerotic plaques contain inflammatory cells, which can get activated by circulating cytokines such as Tumor Necrosis Factor (TNF)-α, produced by infections. Finally, infections increase the metabolic demands of the body, though inflammation and fever. This can increase the heart rate, shorten the diastolic filling time, and compromise coronary perfusion.

210 SUBTLE PRE-EXCITATION A WOLF IN SHEEP’S CLOTHING

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Case Report 17-year-old presented with palpitations and chest pain with otherwise normal physical exam. Work-up with 12 lead ECG and echocardiogram was normal apart from a finding of an anomalous origin of the right coronary artery (ARCA) from the left sinus. CT angiography revealed an ARCA with a 1.5 mm interatrial course between the descending aorta and the right ventricular outflow tract. A stress echo was unremarkable for ischemia however the patient complained of worsening symptoms and underwent surgical unroofing of the right coronary ostium. At follow up the patient continued to report sporadic palpitations followed by chest pain with sudden onset and termination. Follow-up ECGs showed manifest pre-excitation. A review of ECGs, stress tests and perioperative tracings showed subtle pre-excitation at all heart rates. An Electrophysiology Study revealed an accessory pathway mapped to the left lateral mitral annulus.

Abstract 210 Figure 1 12 lead ECG demonstrating a) subtle preexcitation b) obvious preexcitation e) post ablation
with a Shortest Pre-excited RR Interval during atrial fibrillation of 250 msec and inducible antiodromic reentrant tachycardia that was successfully ablated. On follow up patient is asymptomatic with no evidence of pre-excitation.

In conclusion, we stress the importance of a good history to elicit symptomatology. Palpitations due to ischemia typically follow chest pain whereas chest pain following palpitations indicate an arrhythmogenic etiology. Subtle pre-excitation due to a far-left lateral pathway may be difficult to discern in patients with a robust AV node tone.

MINS: CARDIAC ARREST DURING LAPAROSCOPIC APPENDECTOMY


Case Report A 47-year-old male diagnosed with acute appendicitis was planned for laparoscopic appendectomy. Intraoperatively at the time of intra-abdominal insufflation, the patient had an asystolic cardiac arrest with return of spontaneous circulation after cardiopulmonary resuscitation with epinephrine. EKG revealed ST-segment elevation in leads I, aVL, V5-V6. Emergent left heart catheterization revealed angiographically normal coronary arteries with possible high anterolateral and mid-inferior hypokinesis. Troponin T resulted at 0.55 (0.00–0.03 ng/ml). Echocardiogram revealed an ejection fraction of 50–55% with all segments contracting normally. The patient was admitted to the coronary care unit and underwent urgent appendectomy within twenty-four hours.

Laparoscopy requires intrabdominal insufflation which results in elevated intrabdominal pressure with consequent inferior vena cava and aortic compression thus affecting cardiac hemodynamics resulting in decreased cardiac output. The patient’s intraoperative cardiac arrest was likely due to the rapid changes in cardiac hemodynamics essentially from underperfusion.

Coronary angiography revealed angiographically normal coronary vessels with anterolateral and mid-inferior hypokinesis likely as a result of under-perfusion and stunning of the left circumflex during intrabdominal insufflation. The patient was admitted for management of myocardial injury after non-cardiac surgery (MINS).

MINS is a clinically and prognostically relevant diagnosis due to myocardial ischemia either from supply demand mismatch. Diagnosis requires the presence of elevated cardiac biomarkers within 30 days of non-cardiac surgery without symptoms or EKG changes. The prevalence of MINS can be as high as 8% and carries with it a significant increase in 30-day mortality. Patients with MINS has a greater risk for vascular complications, recurrent myocardial injury/infarction, congestive heart failure, and life-threatening arrhythmias.

Carbon dioxide insufflation during laparoscopic procedures directly affects cardiac hemodynamics and can result in brady-cardia, hypotension and cardiac arrest. Patients with myocardial injury after non cardiac surgery should be risk stratified and closely followed as they are at increased risk of future cardiac events.

CASE OF SPONTANEOUS CORONARY ARTERY DISSECTION

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Introduction Spontaneous Coronary Artery Dissection (SCAD) is a rare life-threatening condition that occurs due to separation of the coronary vessel layers leading to ischemia and chest pain. It is associated with connective tissue and rheumatological diseases. It is commonly seen in females and in younger population. SCAD commonly involves the left main coronary vessel.

Case A 31-year-old female with medical history of primary biliary cholangitis and rheumatoid arthritis (RA) comes to the emergency room with intermittent retrosternal chest pain and palpitations that started one day ago. The pain is stabbing, non-radiating and lasts a few minutes. She denies radiation, diaphoresis, dyspnea, nausea and vomiting. She had similar pain 2 weeks ago, which resolved. Denies any tobacco, alcohol, or illicit drug use. She takes prednisone and ursodiol. Physical exam findings include stable vital signs, chronically ill appearance, jaundice, scleral icterus, normal cardiac exam, clear lungs, and pitting edema in lower extremities. ECG negative for ischemic changes. Troponin level is 265. ECHO shows normal wall motion and ejection fraction. Left heart catheterization is highly suspicious for SCAD. An optical coherence tomography (OCT) to confirm the diagnosis was unsuccessful due to severe vessel spasm. She is treated with beta-blocker, aspirin, statin, amlodipine, and nitroglycerin.

Discussion In SCAD an intimal tear leads to an intramural hematoma which reduces lumen size and distal blood supply. It can lead to myocardial infarction, arrhythmias and sudden death. Coronary angiography shows long and diffuse narrowing due to intramural hematoma. It is recommended to confirm diagnosis with OCT, intravascular ultrasound, or cardiac magnetic resonance imaging. Workup includes assessing for underlying inflammatory or autoimmune conditions, connective tissue disorders, hormone levels and fibromuscular dysplasia. Most common associations are RA, systemic lupus erythematosus, Crohn’s disease, Marfan syndrome, and Ehlers-Danlos syndrome. Management includes aspirin, beta blockers, clopidogrel, statin and treatment of underlying associated diseases.
condition. If patient is hemodynamically unstable or has ischemic symptoms, percutaneous intervention or coronary artery bypass graft are considered.

**213** THE CLASSIC OCTOPUS TRAP

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**Case Report** A 68-year-old female with end-stage renal disease and hypertension presented with a middle cerebral artery stroke. Two weeks prior, she had both a normal transthoracic echocardiogram (TTE) and coronary angiography. On arrival, she was hypotensive with low voltage on electrocardiogram (ECG), and had a normal troponin T and TTE. Later, brain imaging showed hemorrhagic conversion. Her proBNP peaked at 17,487 pg/mL and troponin T peaked at 0.41 ng/mL. Repeat TTE revealed a left ventricular ejection fraction (LVEF) 25% and apical hypokinesis with LVOT obstruction. She improved with a vasopressin infusion. A TTE four days later showed improvement of apical hypokinesis and LVEF 40%.

Takotsubo syndrome (TTS) is characterized by transient regional wall motion abnormalities of the right or left ventricle that is often preceded by stress. These abnormalities do not correlate with a single coronary artery distribution and typically there is no atherosclerotic coronary artery disease, hypertrophic obstructive cardiomyopathy, or myocarditis. The presentation mimics an acute myocardial infarction with ST-elevation or depression on ECG, and elevated cardiac biomarkers, in particular, an increased brain natriuretic peptic (BNP) to troponin ratio. Lastly, there is recovery of systolic function within three to six months.

The pathogenesis of TTS is multifactorial from myocardial damage due to catecholamine surge, coronary artery spasm, neurally mediated stunning, and genetics. It often occurs in postmenopausal women. As in this case, TTS should be considered in patients presenting with neurological injury and cardiogenic shock.

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**214** A NOVEL DLL4 INTRAGENIC DELETION IN AN INFANT WITH ADAMS-OLIVER SYNDROME AND PERSISTENT TRUNCUS ARTERIOSUS WITH CROSSED PULMONARY ARTERIES

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**Introduction** Adams-Oliver syndrome (AOS) is a rare genetic disorder with an incidence of 1 in 225 000 individuals and is characterized by aplasia cutis congenita and terminal transverse limb defects. AOS is a clinically heterogenous disorder and cardiovascular malformations have been reported to occur in approximately 20% of these patients. To our knowledge, this is the first description of a newborn with AOS presenting with a DLL4 intragenic deletion and an unusual variant of truncus arteriosus.

**Case Description** This female infant was born at term via a normal vaginal delivery. Physical exam was significant for cranial aplasia cutis congenita (ACC) with no other signs of dysmorphism or limb abnormalities. An echocardiogram done revealed a diagnosis of truncus arteriosus with both the pulmonary arteries arising anterolaterally and crossing one another as they coursed posteriorly. The echocardiogram also demonstrated a right aortic arch with an aberrant left subclavian artery. Pedigree analysis revealed that the patient’s father had tetralogy of Fallot (TOF) and absent fifth toenails bilaterally and the patient’s only sibling also had TOF with ACC and hypoplastic fifth toenails. The patient’s chromosome microarray and FISH for 22q11.2 deletion were negative. Whole exome sequencing identified a pathogenic deletion in DLL4 c.1857_1864delAGGGCCCC, p.P621AfsX12. This variant was also observed in the patient’s father and brother, consistent with a diagnosis of AOS type 6 in the proband and family.

**Discussion** We present a case of AOS type 6 due to a novel intragenic deletion in DLL4, presenting with intrafamilial variability. 6 genes have been identified to be underlying AOS to date, including DLL4. Within the DLL4 gene, 14 pathogenic mutations have been identified prior to this novel intragenic deletion. Pathogenic variants in this gene are considered to affect the conotruncal musculature, likely contributing to the cardiovascular malformations seen in our patient’s family. Additionally, crossed pulmonary arteries are a rare vascular anatomic abnormality. This defect is known to be associated with various genetic syndromes but has not been reported in association with AOS.

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**215** RECALCITRANT CATECHOLAMINERGIC POLYMORPHIC VENTRICULAR FIBRILLATION

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10.1136/jim-2021-SRMC.215

**Case Report** A 50 year old male with a history of generalized anxiety disorder was admitted with an acute anterior STEMI. He underwent successful percutaneous coronary intervention to the left anterior descending artery. On day 5 post revascularization, he had a sudden ventricular fibrillation (VF) cardiac arrest. Successful return of spontaneous circulation was obtained after defibrillation, however, only briefly. He
A CASE OF RECURRENT SPONTANEOUS CORONARY ARTERY DISSECTION OF THE SAME VESSEL

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Case Report Spontaneous coronary artery dissection is a very rare but increasingly more prevalent cause of acute coronary syndrome especially in young women < 60 years of age.1 One review in British Colombia found the incidence of SCAD to be 0.15 new cases per 10,000 people per year.2 Underlying inflammatory conditions such as systemic lupus erythematosus can certainly play a role in an increase incidence of SCAD. 38 year old African American female with history of systemic lupus erythematosus and lupus nephritis presented to the emergency room with ‘pressure-like’ left sided chest pain with radiation to the left arm and left side of her back. In the emergency room she was found to have a troponin of 0.25 and EKG with non-specific t wave abnormalities. Inflammatory markers were obtained and unremarkable at that time. She was taken for coronary angiography the next morning and found to have dissection of her distal RCA extending into the posterolateral branch. The decision was made to medically manage with dual antiplatelet therapy and follow up with repeat coronary angiography at a later date to track progression vs resolution. She underwent repeat coronary angiography about six months later and was found to have complete resolution of her dissection at that time. Around one year later, now at the age of 40 and one and a half years post her original episode of SCAD she presented to the emergency department with chest pain radiating down her left arm. EKG was consistent with inferior ST segment elevation consistent with acute myocardial infarction and she was loaded with aspirin and Brilinta, started on a heparin and nitroglycerin infusion and taken to the cath lab. In the cath lab she was found to have recurrent dissection of her right coronary artery in the mid-distal section of the vessel with active thrombosis present. The decision was made to medically manage with continued dual antiplatelet therapy and glycoprotein IIb/IIIa inhibitor post cath. This case is interesting as this patient did not only have recurrent SCAD but also there is documentation of complete resolution of previous dissection and then re-presentation with STEMI and further coronary dissection in same section of her RCA as her previous event.
and prompt surgical repair are critical for patient's survival as in our case.

**Conclusion**
Cardiologists should be aware of the rare and fatal TCM complications like ventricular wall rupture. Early diagnosis and prompt surgical intervention could be lifesaving.

### LUNG HERNIATION AFTER FORCEFUL COUGHING
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**Case Report**

**Introduction**
Lung hernia is an abnormal protrusion of lung tissue through the boundaries of the thoracic cavity. It is commonly seen after chest trauma or thoracic surgery but rarely occurs spontaneously. We report a patient who presented with a lung herniation after vigorous coughing.

**Case Presentation**
A 70-year-old Hispanic male had a vigorous cough and shortness of breath for 15 days prior to admission. He presented with left chest pain aggravated by chest movement and breathing. Physical examination of the chest wall revealed large ecchymosis over the left anterior and lateral chest. Auscultation of the lungs revealed clear breath sounds bilaterally, but decreased air entry on the left lower side. The patient denied any popping sound or trauma to the left chest wall region. He was a former smoker but denied alcohol or drug abuse. Past medical history was significant for asthma, hypertension, and hyperlipidemia with no history of past chest surgery. Patient was morbidly obese with a BMI of 48.

Laboratory results showed white blood cell count was 14,800/mL, hemoglobin level of 10.7 gm/dL, hematocrit of 30.6%, prothrombin time of 12.7 seconds, and sodium level of 117 mmol/L. A CT scan of the chest with contrast revealed a 4 cm left lung parenchyma herniation at the left 8th intercostal space through the lateral chest wall without signs of strangulation.

The patient was admitted with normocytic normochromic anemia and partial herniation of the left lower lobe of the lung with left side chest ecchymosis. It was decided to proceed with conservative management of compressive pads and anti-tussive medications due to the lack of major symptoms in his current state and no signs of strangulation of the lung. The patient was discharged home in a stable condition. On follow-up the patient continued to be stable, partial resolution of the chest ecchymosis and significant improvement of his shortness of breath and wheezing.

**Conclusion**
With no set guidelines on treatment of lung herniations, symptoms, site of herniation, and presence of strangulation must be considered when deciding the course of treatment. Conservative management is for uncomplicated hernias while surgical intervention is for complicated hernias.

### CHYLOTHORAX POST-CORONARY ARTERY BYPASS GRAFTING: SURGICAL LIGATION OF THE THORACIC DUCT
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10.1136/jim-2021-SRMC.219

**Case Report**

**Introduction**
Chylothorax post-coronary artery bypass grafting (CABG) is a rare complication. In CABG, the most common cause of thoracic duct injury is during the harvesting of the left internal mammary artery (LIMA). We present a case of chylothorax after coronary artery bypass grafting treated with surgical ligation.

**Case Presentation**
A 61-year-old female underwent a mitral valve repair and CABGx4 using a LIMA graft to the LAD artery. Initially, the patient did well postoperatively. However, on post-operative day 2, the patient began having a large amount of left pleural effusion drainage with chylous characteristics.

The patient was treated medically with fasting and total parenteral nutrition. On postoperative day three, the patient drained 2 L/day of continued chylous fluid. On postoperative day 4 the patient drained chylous milky colored fluid, and the patient’s serum triglyceride level dropped to 148. Conservative medical treatment was continued for two weeks without success. Surgical intervention was decided accordingly.

A redo sternotomy was performed, and the mediastinum was explored. As suspected, there was a large amount of milky fluid gushing out from the top of the internal mammary artery (IMA) pedicle on the lateral edge adjacent to the left subclavian vein. The thoracic duct was carefully dissected along with isolation of the IMA pedicle from the left lung and mediastinal pleura. The leaking area was ligated with 5-0 Prolene pledged sutures, thus stopping any further chylous leakage. Doppler evaluation of the IMA showed normal flow signal, ruling out injury to the IMA. The sternum was closed in the standard fashion. The patient continued to be stable and drains were removed after 2 days. She had an uneventful recovery.

**Conclusion**
Clinicians should consider surgical ligation of the thoracic duct when there is a high chest tube output. Medical treatment has a high failure rate, and early embolization or surgical ligation of the thoracic should be considered to reduce hospital stay cost and morbidity.

### A CASE OF ACUTE PERICARDITIS DUE TO COVID-19 INFECTION
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10.1136/jim-2021-SRMC.220

**Case Report**
We present a case of a 3-year-old male with past history of VSD repair complicated by post-pericardiotomy syndrome and recurrent pericardial effusions who presented with pericarditis and pericardial effusion secondary to COVID-19 infection as the first presenting symptom.

The patient was brought to the ED for chest pain. Due to his history of pericardial effusion, CXR and ECHO were performed. A small pericardial effusion was found and patient was discharged on ibuprofen and colchicine. Later that night the patient returned to ED after developing fever, chest pain and increased work of breathing. Repeat ECHO revealed the effusion to be larger and patient was admitted. COVID-19 screening was performed and was found to be positive. Patient was treated with toradol for 4 days till symptoms resolved and was discharged to follow up with his cardiologist.
Case Report Introduction: Although rare, some patients may have atrial septal defect which may complicate this procedure like Catheter-directed thrombolysis.

Case A 41 year-old male, diagnosed with submassive PE. Right heart catheterization with two angled pigtail catheters manipulated through the right heart to reach the right and left pulmonary arteries, however on frontal fluoroscopy the catheters appeared slightly more caudal than expected. Lateral fluoroscopy didn’t show the catheter going through the expected anterior curvilinear course of the right ventricle and pulmonary trunk. Contrast was injected into each pigtail catheter showed retrograde flow of contrast back into the left atrium, confirming that the catheters were in the pulmonary veins, passed through an ASD. Upon review of CTA chest, there was a visible ASD.

Discussion Congenital heart defects are rare but can complicate certain procedures and interventionalists need to be aware of this possibility.

Catheter position more caudal than the pulmonary artery silhouettes should alert the operator to the incorrect placement in the pulmonary veins via an ASD.

In these circumstances, lateral fluoroscopy will show no catheters along the expected anterior curvilinear route of the right ventricle and pulmonary trunk. Contrast injection will show flow back to the left atrium rather than the flow away from the heart. Other potential confirmatory methods include pressure monitoring and blood gas sampling. In addition, careful scrutiny of the CT angiogram for an ASD prior to the procedure may alert the operator to this potential pitfall.
E-L MITRAL INFLOW VELOCITY MASQUERADING AS E/A PATTERN ON ECHOCARDIOGRAPHY IN A PATIENT WITH ATRIAL FLUTTER

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Case Report: Atrial flutter (AFL) carries an increased risk of stroke. Anticoagulation is indicated in patients with elevated CHA2DS2VASc risk score. Echocardiography (ECHO) is useful for distinguishing AFL from other atrial arrhythmias. Pulsed wave (PW) Doppler on ECHO showing an E/A mitral inflow pattern can exclude the diagnosis of AFL. A less known E-L mitral inflow pattern can occur in patients with AFL, leading to inaccurate atrial rhythm diagnosis and incorrect grading of diastolic dysfunction.

An 82-year-old male with history of coronary artery disease, heart failure, AFL and diabetes mellitus, came to the ECHO lab for chest pain workup. He had an EKG rhythm similar to when the diagnosis of AFL was made. PW Doppler of the mitral inflow velocities on ECHO (figure 1) gave the impression of an E/A pattern typical of sinus/atrial rhythm. Search for other features of AFL on ECHO, lead to the conclusion that the rhythm was indeed AFL. L wave masquerading as an A wave lead to an uncertainty in the diagnosis of his rhythm.

The E/A pattern is caused by the combination of the early passive filling of the left ventricle from left atrium (E) followed by an active filling from organized atrial contraction (A). This should be distinguished from an L wave which represents pulmonary vein mid diastolic flow through the left atrium into the left ventricle after early rapid filling.

A prominent L wave can masquerade as an A wave in patients with AFL, leading to inaccurate rhythm diagnosis. Careful observation of other parameters in ECHO is necessary to avoid this pitfall.

CONGENITAL LONG QT SYNDROME MASQUERADING AS EPILEPSY

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Case Report Introduction: Congenital Long QT Syndrome Type 3 is a cause of arrhythmias. While it can lead to sudden cardiac death, it may elusively present with neurologic symptoms.

Case: A 33-year-old man with a history of a ‘seizure disorder’ was admitted after a cardiac arrest. He had been found apneic during sleep, after which he was noted to be in pulseless polymorphic ventricular tachycardia that resolved after defibrillation. Subsequent Electrocardiogram (ECG) revealed a markedly prolonged QTc of 640/584 ms. Left heart catheterization and cardiac MRI were unremarkable. A subcutaneous ICD was placed, and he was started on Nadolol. The patient reported a history of random syncopal events since the age of 12, which occurred without prodromal symptoms and were immediately followed by tonic-clonic seizure activity. Genetic testing revealed an SCN5A mutation consistent with Long QT Syndrome Type 3 (LQT3).

Discussion: LQT3 is the third of congenital long QT syndromes. It is an autosomal dominant channelopathy identified by a mutation of the SCN5A gene, which encodes a cardiac sodium channel’s alpha-subunit. This results in a prolonged action potential, which leads to a long QTc interval. Clinically, this manifests as an increased risk of ventricular arrhythmias and sudden cardiac death that usually occur within the first three decades of life. LQT3 commonly presents with arrhythmogenic syncopal or seizure-like episodes during childhood, leading to multiple missed diagnoses. The QTc interval prolongation correlates with bradycardia, which explains the high proportion of arrhythmias during sleep. The diagnosis is made through a detailed history and 24-hour 12-lead ECG monitoring, followed by genetic testing. LQT3 can be treated with beta-blockers, class 1 agents, and an ICD in severe cases.

PAROXYSMAL SUPRAVENTRICULAR TACHYCARDIA IN SERONEGATIVE KAWASAKI DISEASE LIKE MULTI-SYSTEM INFLAMMATORY SYNDROME IN CHILDREN

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Case Report: Multi-System Inflammatory Syndrome in Children (MIS-C) is the presence of persistent fever with elevated inflammatory markers with evidence of organ dysfunction. Its presentation is highly variable and overlaps with Kawasaki disease. Ventricular dysfunction is the most common cardiac...
manifestation in MIS-C. In a study in Italy, only 2 out of 10 patients who had MISC did not test positive for either IgG or IgM. Considering the temporal relationship with the current SARS-CoV-2 pandemic high index of suspicion is indicated to capture and report unusual presentations of it even in seronegative cases.

We present a rare case of an 8-month-old male child who was admitted for concerns of Kawasaki disease with continuous fever for two-weeks with diarrhea, cough, runny nose, edematous extremities, diffuse macular rash, bilateral erythematous conjunctiva, and oral mucosa. In a febrile event patient presented with supraventricular tachycardia (SVT) associated with desaturation that required transfer to the Pediatric Intensive Care Unit (PICU) for further care. Sinus rhythm was restored after 3 doses of adenosine and 1 synchronized cardioversion. Echo cardiogram evidenced mild mitral regurgitation with small pericardial effusion without any coronary dilation or aneurysm. The patient met MIS-C criteria and he had exposure to SARS-CoV-2 infection in the past 3 wks. Multiple SARS-CoV-2 Protein Chain Reaction tests and antibody tests were negative. He was treated with immunoglobulin infusion and high dose aspirin. He did not require a second dose of immunoglobulin infusion or any second-line treatment. The patient recovered well and was discharged home with propranolol although no abnormal basal rhythm was identified.

Supraventricular tachycardia is an unusual presentation for either Kawasaki Disease or SARS-CoV-2 related MIS-C. Although both entities overlap, they are not mutually exclusive and treatment is similar if not the same. As pediatricians, prompt initiation of treatment and a higher level of monitoring should be considered with suspected Kawasaki disease or suspected MIS-C since we are still learning about its presentation. In our patient, the lack of laboratory confirmation of SARS-CoV-2 does not rule in or rule out any of the conditions.

**Case Report**

An 89 year old female with pertinent medial history of hypertension who presented at the emergency clinic with complaint of shortness of breath which had progressive worsen in a 2 day period. She referred several months history of dyspnea on exertion with associated chest tightness, orthopnea, paroxysmal nocturnal dyspnea and leg swelling. Physical examination remarkable for jugular venous distention, weight loss, bibasilar crackles, and trace pitting edema.

Initial workup including chest X-Ray remarkable for right upper lobe space occupying mass and elevated BNP levels. Chest CT-scan significant for cardiomegaly, bilateral pleural effusion and low density mass at the interfissural region suggestive of tumor. 2D-ECHO consistent with heart failure with reduced ejection fraction. Patient was started on an aggressive diuretic regimen and restrictive fluid intake. After 5 days of inhospital management patient symptoms had significantly improved. Subsequent chest X-Ray were remarkable for almost complete resolution of tumor like right lung lesion.

Localized interlobular effusions (also known as phantom tumor) is a mass-like interlobular fluid collection rarely seen on imagine workup in patients presenting with decompensated congestive heart failure. This imagine findings vanishes after appropriate management. Disappearance of lesion after diuretic therapy tends to confirm the diagnosis. Due to its uncase appearance but easily manageable treatment considering phantom tumor under the confounding presentation of a possible lung tumor in a decompensated heart failure patient may prevent unnecessary, expensive and possibly harmful diagnostic and treatment errors.

Although well-known phenomenon, Phantom Tumor is a condition that can be easily confuse and result in unnecessary hospital resource misuse and money expense. Not to mention increasing the risk of placing the patient to unnecessary radiation or invasive procedures. By making primary physician more aware of this diagnosis, we decrease the probability of missing this easily treated complication of decompensated congestive heart failure and avoid consulting or referring the patient to high cost subspecialties. Being said this; primary care physician can treat phantom tumor in a non-sophisticated facility with just x-ray equipment and loop diuretic therapy.

**Abstract 227**

**LARGE TRICUSPID VEGETATION IN A PREVIOUSLY HEALTHY TEN-YEAR-OLD MALE**

K McKnight*, K Singhapakdi, KP Sharma, C Gavrilita. USA Children’s and Women’s Hospital, Mobile, AL.

**Case Report**

Infective endocarditis (IE) is relatively uncommon in children, especially in those with structurally normal hearts. When present, however, it is important to identify and treat IE promptly due to its ability to cause significant damage to the endocardial tissue and heart valves and its significant mortality rate. Here we will describe a previously healthy pediatric patient with a structurally normal heart who was found to have IE, with a very large vegetation on his native tricuspid valve. However, he did not exhibit any of the classic findings of IE (no Janeway lesions, Osler’s nodes, or splinter hemorrhages), and the vegetation formed on the right side of his structurally normal heart, in the...
A RARE AND MIXED ETIOLOGY OF CARDIAC SYSTEMIC INFLAMMATORY RESPONSE SYNDROME

A 37-year-old female with pmh significant for Graves disease s/p ablation with resultant hypothyroidism was admitted at 20 weeks gestation for preeclampsia. The patient presented with abdominal pain and dyspnea. During evaluation she had significantly elevated TSH and undetectable free T4. She ruled in for preeclampsia with severe features due to blood pressure criteria and proteinuria. In addition, a TTE revealed moderate pericardial effusion. A pericardiocentesis removing 700cc of yellow fluid was performed, and the patient was started on levothyroxine. Analysis of serous fluid proved to be inconclusive. Further workup for etiologies of the effusion such as viral, bacterial, and autoimmune causes were negative. One week later, the patient had a recurrence of the pericardial effusion, along with hemodynamic compromise. A pericardial window was placed with 500cc of fluid removed. Due to worsening of symptoms the pregnancy was terminated. She was eventually discharged medically stable, and to date has experienced no recurrence of symptoms.

Our case presents a unique scenario in which two uncommon etiologies of pericardial effusions presented simultaneously to result in tamponade. Hypothyroidism can lead to a pericardial effusion in 3–6% of cases. The pathophysiology is suspected to be secondary to increased permeability of the pericardial capillaries to albumin, leading to increased colloid pressure within the pericardium, and therefore decreased colloid osmotic pressure gradient between the pericardial space and pericardium. Although hypothyroidism is a much more common etiology in leading to pericardial effusions, pre-eclampsia has also been reported as a cause in the medical literature, likely from generalized capillary leak due to endothelial cell dysfunction and reduced intravascular oncotic pressure.

This case highlights the importance of keeping a broad differential and performing a thorough investigation in determining the etiology of a pericardial effusion. In a patient with risk factors for developing a pericardial effusion, close observation with serial echocardiograms should be performed for early detection and prevention of cardiac tamponade, as the result may prove fatal.

**Case Report**

A 72 yo female with pmh of CAD, T2DM and PAD presented to our hospital with chest pain and elevated troponin level. Coronary angiography revealed a thrombus with dissection in the right coronary artery. She received PCI x 4. After procedure, she had cardiac arrest with polymorphic VT requiring CPR and defibrillation with ROSC and no intubation. The next day she had short VT arrest with ROSC requirin intubation. Afterwards, she became hypotensive with vasopressor requirement and AKI. She developed 2:1 AV block with bradycardia requiring dopamine. Echocardiogram showed inferior wall motion abnormalities, LVEF 35% with RV dysfunction. Due to ventricular arrhythmias, AV block and shock, initial management was for cardiogenic shock secondary to RV infarction. She did not respond clinically to this management. Further workup later suggested distributive shock. Therapy was targeted for distributive shock and she made some improvement. Unfortunately, she had further refractory shock and expired. No clear source for sepsis was identified.

**Discussion**

Cardiac arrest with whole body ischemia and reperfusion syndrome can cause postresuscitation disease. Postresuscitation abnormalities after arrest can mimic severe sepsis. Both are characterized by high levels of circulating cytokines, plasma endotoxin and dysregulated leukocyte production of cytokines. [1] One study showed coagulation abnormalities after cardiac arrest where the thrombin-antithrombin complex was consistently elevated and protein C and S were decreased. [1]

**Conclusion**

Right ventricular infarcts may manifest as cardiogenic shock, and can be complicated by ventricular arrhythmias with cardiac arrest and high degree AV block. However, it is also important to note that patients with post cardiac arrest can have SIRS response due to whole body ischemia and reperfusion.
TAKOTSUBO CARDIOMYOPATHY AND QT-PROLONATION FOLLOWING A CEREBROVASCULAR ACCIDENT

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Case Report Background: Takotsubo cardiomyopathy (TCM), or left ventricular (LV) ballooning syndrome, is a transient LV dysfunction in the apical or mid-ventricular segments usually provoked by physical or emotional stress seen on echocardiogram (ECHO). It is thought to be induced by catecholamine release and microvascular dysfunction. TCM can cause electrocardiographic (ECG) changes, chest pain, and myocardial enzyme release. Here we present a case of TCM with extreme QT prolongation following a cerebrovascular accident.

Case Presentation The patient is a 72-year-old male with a past medical history of end-stage renal disease and hypertension who developed left-sided hemianopsia and neglect. Tissue plasminogen activator was administered after brain imaging. ECG showed prolongation of QT from 458 ms to 706 ms (figure 1). Same-day ECHO showed an ejection fraction of 55–60% with a moderate-sized akinetic apical wall motion abnormality, mostly resolved on the fourth day. Possible offending medications were stopped. Troponin levels were minimally elevated and peaked at 0.519 ng/mL. There were no significant electrolyte abnormalities.

Conclusion Prolonged QT increases the risk of developing dysrhythmias; thus, timely recognition is critical. Here we presented a case of extreme QT prolongation after an acute stroke with ECHO findings of TCM. Appropriate care was provided by the utilization of ECG, ECHO, and timely studies. This is one of the few incidences of extreme QT prolongation in TCM with optimal outcomes through well-coordinated medical management.

SPONTANEOUS CORONARY ARTERY DISSECTION IN A POSTPARTUM FEMALE

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10.1136/jim-2021-SRMC.232

Case Report Spontaneous coronary artery dissection (SCAD) is an extremely uncommon cause of myocardial infarction, occurs predominantly in women during or after pregnancy. The exact etiology is unknown. Here we present a case of SCAD five days postpartum.

29-year-old Hispanic female G2P2 (gravida 2, para 2), was discharged home after an uneventful full-term vaginal delivery of a healthy baby boy, no prior medical history and no history of smoking. Five days postpartum she presented to emergency center (EC) with acute onset sharp chest pain radiating to bilateral arms and upper back at rest. Lab work showed elevated high sensitivity troponin T 6378 (normal high 19 ng/L), EKG with sinus tachycardia, ST elevation 1.5 mm V2-V3, 1 mm V4-V6, and Q wave in II, III, aVF, V1-V4. Transthoracic echocardiogram with ejection fraction (EF) 25–29% with severe hypokinesis. Taken to the cardiacization lab emergently for left heart catheterization (LHC) showed type II SCAD involving proximal to distal left anterior descending (LAD)
and proximal large D1 with TIMI III flow and severe mitral regurgitation. Started on medical management with aspirin 81 mg, lisinopril 5 mg twice daily, metoprolol succinate 25 mg daily, torsemide 5 mg daily, and rosuvastatin 40 mg daily. She was fitted for LifeVest secondary to low EF and discharged home with close follow up with cardiology along with counseling about future pregnancies.

Spontaneous coronary artery dissection has been reported as a cause of myocardial infarction in females during pregnancy or postpartum. The left coronary artery is most commonly affected and typically arises within 2 cm of the aortic ostium. Multiple hypothesis have been proposed but the pathogenesis of coronary artery dissection is still unclear. However, multiparity and advancing age have been reported to be at increased risk. Management can vary patient to patient but can consist of intravenous heparin, nitroglycerin, aspirin, statin, and pain management. Thrombolytics are contraindicated in these patients.

Identifying the cause of tamponade is crucial as it could signify a progression of the metastatic disease with poor prognosis for survival. In conclusion, anterior mediastinal masses can cause cardiac tamponade and should not be deemed as a bystander in the presence of a pericardial effusion.

Endocrinology and metabolism
Joint plenary poster session
4:30 PM
Thursday, February 25, 2021

234 DIABETIC KETOACIDOSIS IN COVID-19 PATIENTS
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10.1136/jim-2021-SRMC.234

Purpose of Study Diabetic ketoacidosis (DKA) is a common condition causing hospitalization and mortality in patients with Type 1 and Type 2 diabetes. In the current COVID-19 pandemic, diabetes is a risk factor for poor outcomes in hospitalized patients. Early reports have indicated that COVID-19 patients with Type 1 Diabetes and DKA had longer lengths of stay, increased rates of ARDS, and higher mortality rates. This study explores those claims.
A CASE OF HIGH INSULIN RESISTANCE AND SHIFTING HHS TO DKA DIAGNOSES

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Methods Used Our study includes 7 COVID-19 positive DKA patients and examines various demographic parameters, laboratory values, and outcomes.

Methods The Infectious Disease and Control office at University Medical Center in Lubbock, Texas, provided a list of patients with a COVID-19 infection hospitalized between March 1 and July 20, 2020. The medical records were reviewed to collect information on age, gender, history of diabetes, laboratory tests pertinent to DKA, and outcomes.

Summary of Results This study includes 7 patients with median age of 39. Three patients (42.9%) were males. The median admission BMI was 29.44 kg/m. Six patients (85.7%) had a history of diabetes mellitus; the median hemoglobin A1c was 12.8% (available in 5 patients). The median admission glucose level was 311 mg/dL with a median anion gap of 21 meq/L. The median pH was 7.25 (7 patients). All patients were managed with insulin infusions, and the median time until the anion gap closed was 48 hours. The median fluid balance during insulin infusion was 5,660 mls. Two patients (28.6%) required mechanical ventilation during their hospitalization. No patients required vasopressors or renal replacement therapy. The median length of stay was 4 days; the mortality rate was 14.3%.

Conclusions Most patients with DKA and COVID-19 in this study had poorly controlled diabetes. They presented with typical laboratory results seen in other patients with DKA without COVID-19 and responded well to intravenous insulin and fluids. Except for one patient, the length of stay was relatively short. This study suggests that patients with diabetes admitted the hospital with COVID-19, especially patients with poorly controlled diabetes, should be screened for DKA and monitored for its development during hospitalization.

PROTOCOL BASED STANDARDIZED ENDOCRINOLOGICAL EVALUATION OF CHILDREN WITH TRAUMATIC BRAIN INJURY: A QI INITIATIVE

J Bhat*, SC Schultz, G Gomez, Louisiana State University Health Sciences Center, New Orleans, LA; CHNOLA, New Orleans, LA

Methods Used The study is divided into pre-QI (baseline phase) and QI phase (post-intervention phase). During the pre-QI phase, retrospective data were collected on children admitted with TBI at our institution for 1 year. The prevalence of HPAD and the percentage of children longitudinally followed in endocrine clinic were estimated. A consensus-based protocol, detailing clinical and hormonal assay-based evaluation at presentation and during the follow up were formulated and implemented. Prospective data collection will be performed to estimate outcome measures (prevalence of HPAD, rate of initial endocrine consultation and endocrine outpatient follow up) and process measure (protocol adherence rate).

Objective To implement a protocol for standardized evaluation of children with TBI for the diagnosis of HPAD and to effectively establish a regular inpatient endocrine consultation and outpatient longitudinal follow up.

Methods Used The study is divided into pre-QI (baseline phase) and QI phase (post-intervention phase). During the pre-QI phase, retrospective data were collected on children admitted with TBI at our institution for 1 year. The prevalence of HPAD and the percentage of children longitudinally followed in endocrine clinic were estimated. A consensus-based protocol, detailing clinical and hormonal assay-based evaluation at presentation and during the follow up were formulated and implemented. Prospective data collection will be performed to estimate outcome measures (prevalence of HPAD, rate of initial endocrine consultation and endocrine outpatient follow up) and process measure (protocol adherence rate).

Conclusions The lower prevalence rate of HPAD in the current cohort of TBI patients may be due to under evaluation for endocrine dysfunction. QI initiative incorporating standardized evaluation using protocol will improve identification follow up rates of patients with endocrine dysfunction following TBI.
**SYMPTOMATIC CLINICAL VARIANT GALACTOSEMIA CARRIER IN A 2-MONTH-OLD GIRL WITH NORMAL NEWBORN SCREENING**

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**Case Report**
Galactosemia is an autosomal recessive disease caused by a mutation leading to decreased activity of Galactose-1-phosphate uridyl transferase (GALT) enzyme. If not treated, can cause serious complications such as failure to thrive, hepatocellular damage, infantile cataracts, intellectual disability and is associated with E. coli infections.

An 8-week-old African-American female presented with fever, decreased appetite, vomiting, and diarrhea. On examination, the patient had increased work of breathing, tachycardia, and signs of dehydration. Inflammatory markers were elevated and coagulation profile was slightly prolonged requiring vitamin K. Urine and blood cultures grew E. coli requiring an antibiotic course. Lumbar puncture was normal.

Two weeks later the patient was re-admitted for E. coli bacteremia and urinary tract infection. Voiding cystourethrogram was remarkable for grade 3 vesicoureteral reflux. Immunoglobulin levels were unremarkable.

Recurrent E. coli sepsis prompted testing for galactosemia despite her negative newborn screen at 15 days old. Her GALT enzyme activity was reduced at 14.3 μmol/g of hemoglobin (normal ≥19.4 μmol/g of hemoglobin). GALT gene sequencing resulted in one copy of the pathogenic variant p. Ser135Leu. Therefore, this patient is a heterozygous carrier of clinical variant galactosemia. Homozygosity for p.Ser13Leu is a prevalent cause of symptomatic galactosemia in African Americans. There is limited data for galactosemia carriers presenting with symptomatic galactosemia; however, this patient shows symptomatic galactosemia with recurrent E. coli sepsis despite being heterozygous for p.Ser13Leu mutation.

**Discussion**
Wernicke’s encephalopathy is frequently overlooked in the nonalcoholic patients presenting with altered mentation. Thyrotoxicosis induces the Krebs cycle to utilize thiamine. Once thiamine is no longer available, the body shifts to anaerobic metabolism resulting in the production of lactic acid as seen in this patient. Wernicke’s encephalopathy, a severe neurologic condition caused by the exhaustion of thiamine reserves, can result in debilitating neurological complications and death if not properly recognized and treated early.

**PEDIATRIC SEIZURES IN THE SETTING OF A FEBRILE ILLNESS: AN UNEXPECTED DIAGNOSIS OF RICKETS**

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**Case Report**
Rickets is a childhood disease in which bony mineralization dysfunction occurs secondary to hyperparathyroidism due to a deficiency of vitamin D. The most common presentation includes skeletal findings and developmental delays. This case discusses a diagnosis of rickets presenting as hypocalcemic seizures in the setting of febrile illness.

A 12-month-old boy presented to his pediatrician after having had seizure activity the night before. He was born at 39 weeks of gestation with an unremarkable delivery and newborn screening tests. On the evening prior to presentation, the patient had become febrile – and that night, he had had a sudden-onset generalized tonic-clonic seizure before falling back asleep. The patient was brought to the outpatient clinic the next morning and diagnosed with otitis media and a simple febrile seizure. He was prescribed amoxicillin and supportive management, but on the way home had another seizure. He was rushed to the emergency department, where laboratory tests revealed critical hypocalcemia. Physical examination findings showed frontal bossing, craniotabes, enlargement of the bilateral wrists at the metacarpophalangeal joints, and mild anterior bowing of tibia bilaterally on weight-bearing. The CMP revealed an elevated alkaline phosphatase level, an elevated parathyroid hormone level, and a decreased level of 25-hydroxyvitamin D. Electrocardiography showed prolonged QT intervals. Emergent repletion of calcium was started with intravenous calcium gluconate; he was also started on oral cholecalciferol and oral calcium carbonate. Oral amoxicillin was continued for right otitis media. A radiologic skeletal acidosis. She received propranolol and PTU for her thyrotoxicosis. After hospital day 2, the patient was no longer hallucinating but remained disoriented despite her approaching euthyroid levels. The persistence of her altered mental status despite treatment of the thyrotoxicosis was concerning. EEG and MRI brain were both unrevealing. During her prolonged hospitalization, it became clear that the patient’s altered mental status was consistent with confabulation which paired with her persistent nystagmus was concerning for potential Wernicke’s encephalopathy. High dose thiamine was started and serum levels were collected. Her mental status and nystagmus improved slowly with supplementation. Suspicion for Wernicke’s was confirmed when her thiamine level returned low at 29 nmol/L.

**Discussion**
Wernicke’s encephalopathy is frequently overlooked in the nonalcoholic patients presenting with altered mentation. Thyrotoxicosis induces the Krebs cycle to utilize thiamine. Once thiamine is no longer available, the body shifts to anaerobic metabolism resulting in the production of lactic acid as seen in this patient. Wernicke’s encephalopathy, a severe neurologic condition caused by the exhaustion of thiamine reserves, can result in debilitating neurological complications and death if not properly recognized and treated early.
survey demonstrated abnormal bone mineralization, fraying, splaying, and cupping of numerous sites bilaterally (femora, tibiae, fibulae, radii, ulnae). There was also mild anterior rib expansion at the costochondral junction bilaterally. After three days of hospitalization, the patient was discharged on oral calcium carbonate with follow-up outpatient appointments.

While the initial presentation of rickets presenting as hypocalcemic seizures in the setting of a febrile illness is rare, previously reported cases suggest that febrile seizures warrant detailed physical examination for bony abnormalities.

### 240 IMPLEMENTATION OF CONGENITAL HYPOTHYROIDISM SCREENING PROTOCOL IN COMMUNITY HOSPITAL NEONATAL INTENSIVE CARE UNITS

**Purpose of Study**
Congenital hypothyroidism (CH) is a preventable cause of intellectual disability and detectable on newborn screening (NBS). Preterm infants have a high rate of inaccurate results on NBS compared to term infants due to thyroid dysmaturity, underlying illness and delayed TSH surge. A screening protocol for preterm infants was created at an academic institution and introduced to two community neonatal intensive care units (NICUs). Our aim is to evaluate the feasibility and adherence to the guideline in the community setting.

**Methods Used**
A retrospective review was conducted at two community NICUs including preterm infants (≥23 to <35 weeks’ gestation) admitted between June 2018 and June 2020 in Houston, Texas (n=575). Data collected included associated genetic conditions, NBS results, free thyroxine and TSH levels. The protocol recommends obtaining thyroid function tests (TFTs) at ~30 days of life with monitoring TSH levels. The protocol recommends obtaining thyroid function tests (TFTs) at ~30 days of life with monitoring TSH levels.

**Summary of Results**
The cohort of neonates had a median GA of 33 2/7 weeks with interquartile range (IQR) 31 1/7–34 2/7 and median birth weight of 1950 g with IQR 1470–2290. TFTs were collected at ~30 days of life in 206 out of 274 (75%) preterm infants that were admitted for at least 21 days. The median number of TFTs done per baby was 1 with a range of 1–5. 38 out of 274 infants (14%) and 31 out of 274 (11%) had abnormal first and second NBS for CH, respectively. In infants less than 28 weeks GA, incidence of abnormal first and second NBS for CH was 50% and 46%, respectively. Subsequent initial TSH levels obtained for those infants were normal (0.5–6 uIU/mL). Hypothyroidism was detected by the screening protocol in one neonate who was started on levothyroxine for medical treatment. This infant was born at 25 6/7 weeks GA and was diagnosed with an atrial septal defect. Results of the first and second NBS were abnormal for CH (reported as ‘TSH slightly elevated’).

**Conclusions**
Implementation of this protocol in community hospitals affiliated with an academic institution demonstrates its practicality. Many community NICUs have limited access to pediatric endocrinologists, so this protocol may improve detection of hypothyroidism in premature infants.
Case Report  Endocrinology was consulted on a 46 years-old man for evaluation of TRH. His past medical history is significant for TRH, congestive heart failure (Ejection Fraction 45–50%), and chronic kidney disease. Physical examination was unremarkable except for a blood pressure of 193/124 mmHg while on furosemide, isosorbide mononitrate, hydralazine, carvedilol, spironolactone, and clonidine. Chart review revealed mild hypokalemia. Computed tomography of the abdomen without contrast showed bilateral enlarged nodular adrenal glands with an increase in size over the last three years (left adrenal gland: 6.3 cm, right adrenal gland: 5.6 cm). Initial workup showed normal free plasma metanephrine, normetanephrine, aldosterone renin ratio, 17-hydroxyprogesterone, and undetectable random adrenocorticotropic hormone (ACTH) with random cortisol of 29 mcg/dL. Subsequent evaluation revealed elevated deoxycorticosterone (3030 ng/dL), 11-deoxycorticosterone (42 ng/dL) and 18-Hydroxycorticosterone (640 ng/dL). He subsequently developed Cushing’s syndrome and diabetes mellitus.

The patient underwent laparoscopic left adrenalectomy and subtotal right adrenalectomy. Pathology showed macro-nodular adrenal cortical hyperplasia. He was started on hydrocortisone for postoperative adrenal insufficiency. On his most recent follow-up, his blood pressure was well controlled on bumetanide, carvedilol, metolazone, and nifedipine. (Hydralazine, isosorbide mononitrate, spironolactone, and clonidine were stopped). After surgery, Corticosterone (92.10 ng/dL), 11-Deoxycorticosterone (<5.00 ng/dL) and ACTH (9 pg/mL) normalized.

Conclusion Determining the etiology of TRH should not be stopped after ruling out the ‘usual suspects’ since malignant hypertension with end-organ dysfunction can develop, if not appropriately treated. In our patient, TRH was due to elevated 18-Hydroxycorticosterone (precursor of aldosterone), which improved after adrenalectomy.

PROLONGED INFANT HYPOGLYCEMIA

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10.1136/jim-2021-SRMC.243

Case Report 8 week old male presents with persistent hypoglycemia. He went to his pediatrician’s office where his glucose was found to be 28 mg/dL, he was then transferred to the hospital. Prior to the current episode he had no fever, cough, congestion, emesis, diarrhea, or other symptoms. He had two prior hospitalizations for hypoglycemia at an outside facility with no cause found. During prior stays he required dextrose fluids at a glucose infusion rate of 5.6 mg/kg/min then was discharged with strict oral feedings every 3 hours. He was born at 38.6 weeks via spontaneous vaginal delivery. Patient’s mother was induced due to preeclampsia. Birth was complicated by broken clavicle and he had prolonged hospital stay for hyperbilirubinemia. Family history was negative for any endocrine or metabolic disorders. Upon arrival to the hospital patient was noted to be well appearing with mild jaundice but otherwise unremarkable physical exam. Glucose on arrival was 50 mg/dL, prior to the next feed the glucose was noted to be 33, so critical hypoglycemia labs were collected. The infant was continued on PO feeding and started on D10 fluids while awaiting lab results. Labs were significant for direct bilirubin of 3.4 mg/dL, beta-hydroxybutyrate of <0.1 mmol/L, insulin level of <0.5 mU/mL, cortisol of 0.63 mcg/dL, and growth hormone of 0.55 ng/mL. Interpretation of the labs revealed an appropriately low insulin level, inappropriately low cortisol, and low growth hormone. An ACTH stimulation test showed an inappropriate response to stimulation as the cortisol did not rise above 18 mcg/dL. Based on the lab results a diagnosis of panhypopituitarism induced adrenal insufficiency leading to hypoglycemia was made. After the diagnosis was made he was started on somatropin, levothyroxine, and prednisolone for hormone replacement. His dextrose fluids were then weaned off. Neuroimaging and ophthalmology consult to evaluate for associated septo-optic dysplasia was deferred to outpatient setting. Neonatal hypoglycemia is a relatively common condition with a wide variety of potential causes. A thorough workup including lab results collected during the hypoglycemic episodes are crucial to obtaining the correct diagnosis. Hypopituitarism leading to adrenal insufficiency and hypoglycemia is a rare cause of neonatal hypoglycemia but is important to recognize early for proper hormone replacement therapy.

DÉJÀ VU: RECURRENT ABDOMINAL MASS AND NEW PARASPINAL MASS IN A YOUNG ADULT

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Abstracts

Case Report  Neuroendocrine tumors are an uncommon source of pediatric hypertension, but should be considered in cases of adrenergic storming. Pheochromocytomas (PCC) account for 1% of pediatric HTN diagnoses and are more likely to be related to genetic mutations at younger ages of presentation. Multiple genetic syndromes predispose patients to develop PCC, including VHL, MEN-2, NF-1, and FPS (Familial Paraganglioma Syndromes).

A 20-year-old female presented with four days of chest and abdominal pain, palpitations, urinary frequency, diarrhea, dizziness, blurry vision, and headaches. Her history was significant for a left suprarenal PCC, resected at age 12. Vitals were notable for labile hypertension. Labs were normal except for mild anemia. CT of the chest and abdomen revealed a 5.9 × 4.5 × 5.1 cm paraspinal posterior mediastinal mass at T5-T8 and a 3.8 × 5.4 × 4.5 cm left-sided suprarenal mass.

Maternal history was notable for PCC and subsequent paraganglioma. Consequently, genetic testing at the patient’s initial presentation revealed an SDHB p.R46X mutation. Due to risk of tumor recurrence with SDHB mutations, frequent surveillance with serologic testing and imaging is recommended, but this patient was lost to follow up.

Ultimately, the addition of an α-blocker, β-blocker, and CCB were required to control hyperadrenergic symptoms. NET labs showed elevated plasma epinephrine, dopamine, and chromogranin A. MIBG revealed intense radiouptake of the paraspinal mass and no uptake of the suprarenal mass, similar to the prior PCC. Due to concern for PCC recurrence, biopsy was contraindicated, but resection has been planned.

Several SDH gene mutations have been associated with FFS. SDHB mutations are autosomal dominant, associated with the development of extra-adrenal tumors with an increased risk of malignancy. This case demonstrates the importance of genetic testing and long-term surveillance in pediatric patients with PCC.
MYONECtin IS A MARKER OF REMISSION OF TYPE 2 DIABETES IN OBESE HUMAN SUBJECTS
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Purpose of Study Obesity is a national epidemic and is a major component of metabolic syndrome. To prevent the progression to Type 2 Diabetes (T2D), patients are instructed to either lose weight or are put on a medication regimen. To date, diet and exercise are considered the gold standard in prevention and treatment, however no single diet has emerged as the optimal diet for remission in T2D patients.

We studied the effect of a High Protein (HP)(30% protein, 40% carbohydrate, 30% fat) diet vs High Carbohydrate (HC) (15% protein, 55% carbohydrate, 30% fat) diet in obese, T2D patients on remission of T2D to normal glucose tolerance (NGT), weight loss, body composition, and metabolic parameters in this randomized controlled clinical trial.

Methods Used We recruited 24 women and men who were recently diagnosed with T2DM and they were randomized to a HP or HC for 6 months. All food was provided and designed for weight loss according to participants resting metabolic rate. Oral glucose tolerance (OGTT), weight loss, insulin sensitivity (IS), metabolic parameters, cardiovascular risk factors (blood pressure, lipids), inflammatory markers and DXA (to determine Lean Mass (LM) and Fat Mass (FM)) were measured at Baseline (BL) and after 6 months on the diets. The novel myokine, myonectin, was of interest due to the possible implications of its use in clinical practice and measured at BL and 6 months.

Summary of Results 12 patients completed the study. 100% (n=6) of the HP group had remission to NGT. 16.5% (n=6) of the HC group had remission to NGT. Although similar weight loss was obtained LM was gained in the HP group (+2.30%), but was lost in the HC group (-2.09%) along with FM loss in both groups. OGTT studies showed significant improvement in IS to NGT in the HP group compared to the HC group. The HP diet group had greater improvements in CVR and inflammatory markers than the HC diet group. Myonectin levels were significantly lower after 6 months on the HP group compared to the HC group.

Conclusions These data suggest that a diet with a high protein content is optimal to the remission of T2DM. This could be explained by the gain or preservation of lean body mass in patients. The changes in myonectin levels could be used as a marker of remission of T2D.

THE CARDIOMETABOLIC PROFILE OF A LEAN MODEL OF POLYCYSTIC OVARY SYNDROME

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Purpose of Study Polycystic Ovary Syndrome (PCOS) is the most common endocrinopathy in reproductive-age women. It is characterized by hyperandrogenemia and is associated with cardiometabolic abnormalities such as obesity, insulin resistance (IR), and increased blood pressure (BP). Obesity plays a major role in the clinical manifestations of PCOS, since weight loss is associated with reductions in metabolic derangements. Whether or not increased circulating androgens cause obesity and how these effects may occur remains poorly understood. We tested the hypothesis that obesity mediates the androgen-induced cardiometabolic abnormalities in PCOS.

Methods Used Four-week-old female Sprague Dawley rats were randomized to either dihydrotestosterone (DHT, 7.5 mg/90 days) or control. DHT rats were assigned to ad libitum diet or daily pair-feeding schedule (PF-DHT) based on food intake (FI) of control (n=5–8 per group). Body composition (by EchoMRI), proteinuria, and IR were determined every 4 weeks. BP was measured by radiotelemetry.

Summary of Results DHT rats have increased FI, body weight (BW), fat mass, proteinuria, IR, and BP than control. With pair-feeding, FI in PF-DHT was decreased to the same level as control. In PCOS, pair-feeding abolished the increase in fat development pathway. We report a case series (n=12) of neonatal CHD treated for hypothyroidism and describe the rate of detection by newborn screening among CHD patients.

Methods Used A single-center, retrospective review was conducted to identify CHD patients hospitalized in the neonatal intensive care unit (NICU) from January 2013 to March 2019 (n=413). Infants born before 32 weeks gestational age were excluded due to increased rates of hypothyroidism related to prematurity. Data collected included type of cardiac defect, birth parameters, newborn screen results, and duration of medical treatment for hypothyroidism with levothyroxine.

Summary of Results Twelve patients were treated with levothyroxine during their hospitalization. Incidence of treatment for hypothyroidism among hospitalized CHD neonates was 1:34. The mean gestational age was 35 5/6 weeks and mean birth weight was 2408 g. Seven infants (58%) had a normal first newborn screening and five infants (42%) had a normal second newborn screening. The median age of initiation of levothyroxine was 41.5 (27 to 146) days of life. The incidence of permanent CH diagnosed at 3 years of age was 1:138 (n=3), one of which had Trisomy 21. Eight patients were lost to follow-up.

Conclusions This case series demonstrates a higher rate of treatment of hypothyroidism in the neonatal period as well as permanent CH in CHD patients compared to the general population. The first and second newborn screens only accurately detected about half of patients who were required treatment with levothyroxine, suggesting the newborn screen may be an insufficient screen of CH for infants with CHD, making early identification of CH challenging in a high-risk population.

THE RATE OF DETECTION OF CONGENITAL HYPOTHYROIDISM IN PATIENTS WITH CONGENITAL HEART DISEASE VIA NEWBORN SCREEN

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Purpose of Study Congenital hypothyroidism (CH) is the most common and preventable cause of intellectual disability in children, with a reported incidence of 1:2000–4000 in the general population. All newborns are screened for CH by newborn screening programs. Congenital heart defects (CHD) are the most common birth defect and may be associated with an increased risk for CH due to a common embryonic
mass (12.5 ± 1.7 vs 22 ± 2.5 g, p<0.001) and attenuated the increase in BW (269 ± 6 vs 308 ± 7 g, p<0.001). Pair-feeding normalized BP (103.8 ± 0.6 vs 109.6 ± 0.7 mmHg, p<0.0001) and ameliorated the androgen-induced increase in proteinuria. Pair-feeding worsened the Homeostatic Model Assessment of IR (5.4 ± 0.4 vs 3.4 ± 0.6, p<0.01).

Conclusions In summary, pair feeding in PCOS decreases obesity which leads to a decrease in proteinuria and BP. Obesity appears to play a key role mediating the cardiometabolic derangements in women with PCOS. Though IR was not improved, weight loss is a promising therapeutic for the cardiometabolic abnormalities in PCOS. Funded by COBRE/MS CEPR P20GM121334.

248 UNUSUAL ADVERSE EFFECT OF COMMONLY USE ANTIDIABETIC AGENT

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Introduction Euglycemic diabetic ketoacidosis (euDKA) due to sodium-glucose cotransporter 2 inhibitor (SGLT2 inhibitor) is a serious side effect that can be triggered by a very low carbohydrate diet with <1% incidence. It is vital to keep low threshold for diagnosis of euDKA in patients taking SGLT2 inhibitors to avoid delay management and to identify risk factors. We report a case of euDKA due to dapagliflozin with recent start of a very low carb diet.

Case A 38 years old lady with type 2 diabetes mellitus, on Dapagliflozin for a year, presented to ED with 3 days of abdominal discomfort associated with intractable nausea and vomiting. She drank 6 packs of beer daily and started a very low carb diet 2 weeks ago. Admission viral signs and physical exam were unremarkable except mild epigastric tenderness. Labs: neutrophilic leukocytosis, glucose 185, HCO3 4, anion gap 20, BUN 8, creatinine 0.7, HbA1c 11.8; ABG pH 7, pCO2 8.6, HCO3 2, beta hydroxybutyrate 49 mg/dl, Lactic acid 0.8 and negative ethanol level. UA showed glucose3+, protein1+,ketone2+ & negative hCG. Once diagnosis of euDKA was confirmed, DKA protocol was initiated. She improved clinically and was discharged home with basal bolus insulin, discontinuation of dapagliflozin & diabetic education.

Discussion Adverse effects of SGLT2 inhibitor should be considered in the presence of precipitants including strenuous physical activity, very low carbs/ketogenic diet, prolonged starvation and heavy alcohol intake. It is contraindicated in eGFR<30. The mechanism of euDKA due to SGLT2 inhibitor is thought to be due to reduced insulin and increased gluconeogenesis, which cause glucose metabolism shifting to fatty acid oxidation, leading to ketonemia and euDKA. By lowering the renal glucose excretion threshold, SGLT-2 inhibition may mimic starvation condition, leading to increased ketone and its renal re-absorption. It renders the body susceptible to ketonemia and continues to produce glycosuria, thereby causing euglycemia.

Conclusion Early recognition of etiology of euDKA and precipitants are crucial to prevent metabolic consequences. Patients on SGLT2 inhibitor should be educated on signs and symptoms of DKA, precipitants and instructed to seek help when they are experiencing the symptoms.

249 SARCOIDOSIS PRESENTING AS HYPOADRENALISM

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Case Report Sarcoïdosis is a multisystem granulomatous disorder that may present with lymphadenopathy, lung nodules, skin, joint and/or eye lesions. Lung involvement is common but 30% may have extra-thoracic manifestations such as pituitary granulomas causing secondary adrenal insufficiency, but rarely presents as disease of the adrenal gland.

A 38-year-old athletic male was referred to endocrinology for possible hypoadrenalism. He had a past history of seasonal allergies, and had been recently seen by neurology for gradual onset of generalized muscle soreness, weakness and difficulty getting out of a chair. MRI of his brain was normal. He was nausea and lightheaded on standing. In addition he had arthralgias. His father had sarcoidosis. Body mass index was 22.3 kg/m². On examination he did not have periorbital edema, conjunctival injection, exophthalmos, visual field defects or cushingoid features. He had a palpable, mobile, supraclavicular lymph node. A 250 mcg cosyntropin test was interpreted as possibly in the hypoadrenal range with 30 and 60 min cortisol level of 19.9 mcg/dl and 22.5 mcg/dl, respectively. Serum protein immunoelectrophoresis revealed high IgG Kappa. His CBC, ESR, comprehensive metabolic profile, vitamin D, B12, free T4 and TSH were normal. Lymphoma and sarcoidosis were in the differential diagnosis with concomitant hypoadrenalism. He was started on hydrocortisone 20 mg/day and at 3 weeks follow-up he had significant clinical improvement. Hematology, rheumatology, and surgery were consulted with the following results: C-reactive protein 32 elevated, Anti-CCP 0.6, Rheumatoid factor 15, Angiotensin converting enzyme 102 elevated, peripheral blood smear bone marrow were normal. Lymph node biopsy was negative for lymphoma or granulomas. CT scan of chest, abdomen, and pelvis was normal. Diagnosis of sarcoidosis was made, and the patient was started on hydroxychloroquine. A repeat 250 mcg cosyntropin test at 18 months was definitively in the hypoadrenal range, 10.0 mcg/dl and 11.6 mcg/dl.

Autoimmune endocrinopathies frequently coexist with sarcoidosis, and when Addison’s disease occurs in this context, the mechanism is usually autoimmune adrenalitis. Our patient did not have a tissue diagnosis of noncaseating granulomas, but the lymphadenopathy and elevated ACE levels made the diagnosis of sarcoidosis likely.
approximately 11 mg/dL and average PTH of 2000 pg/ml had been refractory to medical therapy, thus parathyroidectomy was pursued. On day 1 postoperatively he developed diffuse paresthesia with Chvostek's sign and a prolonged QTc on electrocardiogram. Investigations revealed a profound hypocalcemia and hypophosphatemia with a precipitous fall in PTH to 32 pg/ml. Over the ensuing week he required aggressive parenteral and oral calcium and vitamin D supplementation. He was discharged on substantial doses of oral supplementation and despite compliance, had to be readmitted 3 weeks later for symptomatic hypocalcemia. Parenteral calcium loading at dialysis sessions with high calcium baths are being planned.

**Discussion** Hungry bone syndrome is the phenomenon of hyperdynamic bone resorption of calcium after parathyroidectomy. Although initially described with primary hyperparathyroidism (HPT), it has been shown to be more common and severe in HPT secondary to renal disease. In such cases, profound hypocalcemia, hypophosphatemia and hypomagnesemia are typical. Hyperkalemia may also be seen although the mechanism is yet uncertain. In this case of tertiary HPT, autotransplantation was performed in attempt to reduce the risk of postoperative hungry bone syndrome, although, it was unsuccessful as demonstrated. Preoperative calcium and calcitriol supplementation have been purported to reduce the risk of hungry bone syndrome and aggressive repletion is the mainstay of postoperative management. However, despite the prevalence of end stage renal disease, there is still a paucity of high quality data on effective prevention or management of this disease.

**Abstracts**

**251 HYPERINSULINEMIC HYPOGLYCEMIA IN AN INFANT WITH PARTIAL TRISOMY 13**

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**Case Report** Hyperinsulinemic hypoglycemia is unregulated secretion of insulin from the pancreas in the presence of hypoglycemia. Hyperinsulinemia has been reported in patients with chromosomal abnormalities including Beckwith-Wiedemann and Turner syndromes, but rarely reported in trisomy 13. We present a case of an 8-week-old former 37 week male with a translocation of chromosome 13:17 admitted with feeding difficulty and apnea. History is significant for a brief NICU stay for hypoglycemia managed with orogastric feeds. No further evaluation for hypoglycemia was done at that time. On presentation, vital signs were normal for age. He was well-appearing with low-set ears and retrognathia. No clefts, no microphallus, or midline defects noted. He had normal muscle bulk and tone, no nystagmus, and present infant reflexes. Initial blood glucose level was 48 mg/dL. He was started on D5 containing IV fluids. Several hours later he developed hypoxia and seizure-like activity. Blood glucose level was 43 mg/dl, with an elevated insulin of 30.7 IU/mL, he developed hypoxia and seizure-like activity. Blood glucose levels normalized. He developed peripheral edema, a side effect of diazoxide, managed with furosemide. The diazoxide dose was weaned as an outpatient and blood glucoses have remained stable with bolus feeds. Hyperinsulinemic hypoglycemia is caused by inappropriate insulin secretion from pancreatic beta-cells, and can worsen with high dextrose concentration boluses, as the resulting hyperglycemia triggers more insulin secretion. The mechanism for inappropriate insulin secretion in patients with chromosomal abnormalities remains unknown, though several genes have been identified that may be involved. Hyperinsulinemic hypoglycemia could be considered in patients with chromosomal abnormalities and recurrent hypoglycemia, as it is managed with continuous glucose infusion rather than high concentration dextrose boluses.

**252 PROPYLTHIOURACIL INDUCED HEPATOTOXICITY**

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**Introduction** Propylthiouracil (PTU) is one of the common antithyroid drugs used in treatment of hyperthyroidism. Common side effects includes rash, arthralgia, vasculitis, and agranulocytosis. Hepatotoxicity is a rare side effect of PTU therapy. We present an interesting case of PTU induced hepatotoxicity.

**Case Description** A 39 year old AAM with history of Grave’s disease presented to hospital with complaint of weakness and fatigue. Vital signs were within normal limits. He was alert and oriented initially, but became more altered and was subsequently intubated to protect airway. His laboratory results showed TSH of 0.00 mIU/mL and Free T4 of 3.31 ng/dL. He was started on hydrocortisone, propranolol, Lugol’s iodine, and PTU. He had markedely elevated liver function test (LFTs) on day two of hospitalization [AST 3720 Units/L, ALT 2433 Units/L, ALP 139 Units/L and Total bilirubin of 2.8 mg/dL]. PTU was discontinued. His LFTs gradually improved off PTU, so he was started on methimazole. He progressively continued to improve. He was extubated to nasal cannula and was eventually discharged on Methimazole and Propranolol.

**Discussion** Graves’ disease is the most common cause of hyperthyroidism in the United States. Treatment options include antithyroid drugs, radioactive iodine treatment and surgery. Drug induced liver injury has been reported in 0.3% to 0.5% of patients taking antithyroid drugs. Propylthiouracil is a thioamide and a thyroid hormone antagonist which acts by inhibiting the incorporation of iodine into tyrosyl residues of thyroglobulin and thus lowering thyroid hormone levels. Hepatotoxicity is a rare complication of thioamide therapy. The onset of hepatotoxicity is usually within 2 to 12 weeks of starting, and the pattern of enzyme elevations is typically hepatocellular. The severity of PTU induced liver injury varies from mild, transient serum aminotransferase elevations to severe hepatitis, hepatic failure, need for liver transplantation and even death. After medication discontinuation, liver function tests should be monitored weekly until normalization.

**Conclusion** Although PTU-induced liver failure is rare in clinical practice, liver function should be appropriately monitored during treatment with PTU, especially in the first 6 months of therapy.
HYPERGLYCEMIC HYPEROSMOLOAR STATE: WHEN SARS-COV 2 TURNS DOWN TO BE SWEET

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Case Report Hyperglycemic emergencies such as diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic state (HHS) are commonly precipitated by infections. Severe Acute Respiratory Syndrome-Coronavirus 2 (SARS-CoV-2) is a Novel infectious process triggering hyperglycemic crisis. SARS-CoV-2 at the level of the lungs affects ACE2 functioning which in turns decrease the B cells proliferation at the pancreas and impede insulin secretion.

We present a 39-year-old woman with comorbidities of uterine fibroma, who presented with a complaint of general malaise, polyuria and polydipsia of 1 week of evolution. Associated with sore throat, subjective fever, dry cough, abdominal pain, nausea and vomiting. Physical examination remarkable for dry oral mucosa, decreased skin turgor, and periorbital puffiness. Vital signs significant for hypertension, tachycardia and tachypnea. Laboratory workup remarkable for glucose of 1321 mg/dl, HCO3- of 16 mEq/L, serum osmolality of 333 mOsm/kg, serum ketones positive and HbA1C of 15%. ABG’s showed pH of 7.33, PCO2 of 29.8 and a PAO2 of 158.5 mmHg for a high anion gap metabolic acidosis, non-anion gap metabolic acidosis with respiratory alkalosis. Chest X-ray revealed bilateral perihilar, peribronchial cuffing. We get back positive PCR for SARS-CoV-2.

Clinical and laboratory workup met criteria for the diagnosis of HHS and Diabetes Mellitus de Novo precipitated by SARS-CoV-2 infection. Patient was treated with IV fluids and insulin infusion with resolution of hyperglycemia, ketonemia and symptoms.

SARS-CoV-2 infection can precipitate acute metabolic complications in patients with diabetes or unknown diagnosis of diabetes. The effect of the virus could be direct on β-cell function and patient can develop DKA or HHS. To our knowledge, there are only a few cases reported of HHS precipitated by SARS-CoV-2 infection therefore medical awareness is important for early diagnosis, management and treatment in patients presenting with hyperglycemic emergencies de novo since SARS-CoV-2 infection must be ruled out.

THE EFFECT OF METFORMIN USE ON PREVALENCE OF VARICOSE VEINS IN THE TYPE 2 DIABETIC HISPANIC POPULATION- A RETROSPECTIVE STUDY

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Purpose of Study Several studies have been able to demonstrate that Metformin may reduce risk of cardiovascular disease in type 2 diabetes. This study focuses on verifying such association in the Hispanic population, who are adversely affected by type 2 diabetes. The aim of this retrospective cohort study is to analyze and confirm if there is reduced risk of varicose veins with Metformin use in the type 2 diabetic Hispanic population.

Methods Used This comparative, retrospective chart review analysis, reviews 1765 patient medical charts. Patients who matched our inclusion criteria: type 2 diabetes, seen between 2008–2018, and above 18 years of age. Data was divided into various medication groups centered around Metformin to compare prevalence of varicose vein. All analyses were carried out using STATA V.15.

Summary of Results The prevalence of varicose veins was high in the Metformin group 40 (3.1%) compared with other medications group 9 (1.9%) with P value of 0.19. The unadjusted association results demonstrated an increased risk of having varicose veins within the Metformin user population PR (95%) 1.6 (0.78, 3.28), yet the results between both groups did not have a significant P value (0.20) to confirm this finding. Unadjusted associations to increased risk of varicose veins with significant results were found in variables including age, hypertension, dyslipidemia, and statin use with P value of <0.001, 0.048, 0.029, and 0.026, respectively. Adjusted association in Metformin use found increased prevalence in varicose veins PR 1.25 (0.6, 2.6), but P value was 0.555. Metformin group was compared with 3 other groups (insulin group, sulfonylurea group and other hypoglycemic agents like sulfonyureas, meglitnides, acarbose, and thiazolidinedione), the results demonstrated an increased risk of having varicose veins within the Metformin group with PR 1.61, 1.18, 1.47 respectively, but it was not statistically significant.

Conclusions The importance of these results is that Metformin may not have a protective effect against varicose veins in the Hispanic population. A more detailed and controlled study with individuals taking Metformin may need to be performed.

DYNAMIC COURSE OF NORMAL TSH FUNCTION AFTER EXCISION OF A THYROTROPIN-SECRETING PITUITARY TUMOR (TSHOMA) IN A PATIENT WITH THYROID CANCER: REVIEW OF THE LITERATURE

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Case Report Thyrotropin-secreting adenomas (TSHomas) are a relatively rare pituitary tumor and consequently there is limited information on both the time course of normal thyrotroph function after surgical cure and its association with thyroid cancer. A 53-old-man was incidentally found to have an inappropriately elevated TSH with biochemical hypothyroidism during the evaluation of a goiter. He felt well and displayed only a mild finger tremor. His pre-treatment TSH was 6.43±0.78 (SE) uIU/ml (95%CI: 3.93, 8.94) (ref: 0.40 - 4.00 uIU/ml), Free Thyroxine 2.64±0.12(SE) ng/dl (95%CI:2.0, 3.2) (ref: 0.80 - 1.90 ng/dl), and Free Triiodothyronine 6.29±0.27(SE) pg/ml (95%CI:5.11, 7.48) (ref: 1.80 - 4.20 pg/ml). A thyroid ultrasound demonstrated multinodular goiter and a 5.1 cm dominant nodule revealed a follicular neoplasm by cytology with Afirma FNA thyroid analysis interpreted as suspicious for thyroid cancer. An MRI pituitary study showed a 1.0 cm x 0.9 cm x 0.8 cm pituitary tumor. Transsphenoidal adenomectomy was first performed with prompt reduction in TSH and subsequent hypothyroidism. The pre-operative TSH of 8.5 mIU/ml fell to 0.13 mIU/ml and 0.01 mIU/ml, two and six days post-excision, respectively. The TSH was still undetectable 27 days post- excision, but within normal limits at 0.6 mIU/ml 45 days post-excision. There was resolution of
sleeplessness and tremor post adenomectomy. A thyroidectomy for thyroid cancer was performed 34 days after the transsphenoidal surgery and a 1.1 cm differentiated papillary thyroid cancer was found within the left dominant adenomatoid nodule with bilateral multi-foci of 0.8 cm and 0.3 cm papillary cancer. The TSH remained within normal limits for 14 months after TSHoma excision while the patient was on Levothyroxine replacement, until the Levothyroxine dose was increased for partial TSH suppression to treat the history of thyroid cancer. The serum Thyroglobulin was undetectable and the patient was negative for Thyroglobulin antibodies. In conclusion, normal TSH function was established within seven weeks of TSHoma excision with a subsequent thyroidectomy for multi-focal thyroid cancer.

### 256 ALTERATIONS IN CLASSICAL AND NON-CLASSICAL INTRARENAL RENIN ANGIOTENSIN SYSTEM IN POLYCYSTIC OVARY SYNDROME

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**Purpose of Study** Polycystic Ovary Syndrome (PCOS), the most common endocrinopathy in women, is characterized by androgen-excess, associated with obesity and hypertension (HTN). Therapeutic options to treat PCOS-associated cardiovascular risk factors are limited. We have previously characterized a rat model of PCOS in which chronic androgen-excess causes increased body weight, HTN, and activation of angiotensin converting enzyme/angiotensin 2 receptor type 1 (ACE/AT1R) axis of intrarenal Renin Angiotensin System (RAS) components. Still, the mechanisms responsible for HTN in PCOS remain unclear. In this study, we tested how chronic androgen-excess changes the renal mRNA expression profile of the RAS in a model of PCOS.

**Methods Used** Four-week old female SD rats were randomized to either control or dihydrotestosterone (7.5 mg/90 days). BP was measured by radiotelemetry. After 85 days of DHT, renal cortices and medullas were collected. Renal mRNA expression was assessed separately by RT-qPCR.

**Summary of Results** DHT rats were found to be hypertensive (116±1 vs 107±2 mmHg, p<0.001). In DHT rats, cortical mRNA expression of angiotensinogen, AT1R, renin receptor, dipetidyl peptidase 3 (DPP3), nephrilysin (MME), and prolylendopeptidase (PREP) were increased. In addition, medullary mRNA expression of ACE (4.89±1.12 vs 88±0.293 AU, p<0.01), ACE2 (3.00±0.78 vs 0.36±0.12 AU, p<0.05), angiotensinogen, AT1R, DPP3, kallikrein 1, MME, N LN, PREP, Mas 1 receptor (MAS) and thimet-oligopeptidase were increased. Medullary mRNA expression of renin and aminopeptidase B were decreased in DHT rats.

**Conclusions** In summary, androgen-excess led to increase ACE/AT1R and ACE2/MAS axis components in both cortex and medulla. The increased ACE2/MAS axis could be a compensatory mechanism for the HTN in PCOS. This study highlights the effect of androgen-excess modulating the intrarenal RAS. Treatments focused on targeting RAS components may be promising therapeutic tools to ameliorate the cardiovascular abnormalities observed in PCOS. Funded by COBRE/MS P20 GM-121334.

### Gastroenterology and nutrition and dietary supplements

**Joint plenary poster session**

**4:30 PM**

**Thursday, February 25, 2021**

#### 257 CHRONIC DIARRHEA AS A PRESENTATION OF BEHÇET DISEASE

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**Introduction** Behçet disease is a rare disease characterized by recurrent oral ulcers, genital ulcers, ocular disease, skin lesions, gastrointestinal involvement, vascular disease, and arthritis. The clinical symptoms are due to vasculitis.

**Case presentation** A 32-year-old male patient presented for chronic diarrhea that has been present for four months. He described it as watery, occasionally bloody, 8–10 times a day associated with mucus. He reported 16 kg weight loss in 4 months, recurrent oral ulcers for a year, recurrent joint pains, and eye symptoms; he described right eye pain, redness, blurry vision, light sensitivity, and sometimes a skin rash. At the site of needle prickling for blood labs, he started to develop papule around it after 24 hours. CT abdomen showed thickening of the ileum and cecum. A colonoscopy was done to rule out inflammatory bowel disease (IBD); however, the biopsy showed focal ulceration, cryptitis, and crypt abscesses that were atypical for IBD. He was examined by an ophthalmologist, who documented evidence of uveitis in his right eye. The Rheumatology team was consulted and did a pathergy; it was positive after 48 hours. The patient met the criteria for the diagnosis of Behçet disease. The presence of recurrent large oral apthae one year before presentation, evidence of uveitis, skin rash, and positive pathergy test confirmed the diagnosis. He was started on colchicine and reported improvement after three months of follow up.

**Discussion** The diagnosis of Behçet disease is challenging. No pathognomonic test can be used for definitive diagnosis. The presence of recurrent oral aphthae at least three times in a year plus two of the following: recurrent genital aphthae, uveitis, skin lesions (pseudofolliculitis, papulopustular lesions, and erythema nodosum), and positive pathergy test defined by a papule of 2 mm or more developing after oblique insertion of a 20-gauge needle 5 mm into the skin of the forearm after 24–48 hours. Gastrointestinal involvement is rare and can be challenging to differentiate from inflammatory bowel disease. It causes ulceration, mostly in the terminal ileum, cecum, and the ascending colon like our patient.

#### 258 FEBRILE NEUTROPENIA FOLLOWING INFlixIMAB


**Introduction** Infliximab (INF ximab) has been used in a variety of inflammatory bowel diseases and certain cancers and has been associated with the development of ATN. However, the exact mechanism of this complication remains unclear. This study aimed to report our experience with INF ximab and ATN.

**Case presentation** A 69-year-old female presented to our institution with abdominal pain, diarrhea, and fever. She had a history of Crohn’s disease treated with INF ximab for 14 months. On physical examination, she was febrile, and her vital signs were within normal limits. Laboratory tests revealed a white blood cell count of 6600/μL, neutrophil count of 4700/μL, and platelet count of 276,000/μL. Abdominal radiographs revealed air fluid levels in the right lower quadrant. An urgent CT scan of the abdomen and pelvis was performed, which showed signs of acute appendicitis. The patient underwent an emergency appendectomy, and the appendix was found to be swollen and inflamed. Pathological examination confirmed the diagnosis of acute appendicitis. The patient had an uneventful recovery and was discharged on postoperative day 2. The patient was subsequently rechallenged with INF ximab and had a similar reaction with fever, abdominal pain, and diarrhea. The patient was subsequently treated with steroids, and the symptoms resolved. This case highlights the importance of being aware of the potential complications of INF ximab, including ATN.
Case Report A 24-year female with multisegment Crohn’s disease presented with fever, chills and myalgia. Six days prior to admission she received her first treatment dose of Infliximab. Admission CBC revealed a leukopenia 2.86 x 10^9. The patient was started on Zosyn and admitted for management of febrile neutropenia. An infectious work-up was non-revealing. Subsequent labs revealed worsening leucopenia with nadir 0.71 x 10^9 and an absolute neutrophil count of 0.15 x 10^3. The patient responded to treatment with Granulocyte Colony Stimulating Factor (Filgrastim). The patient defervesced and was discharged with a WCC 7.41 x 10^9 and absolute neutrophil count 4.75 x 10^3.

Agranulocytosis is a rarely documented side effect of Infliximab therapy likely due to the formation of autoantibodies against granulocytes and neutrophils. Infliximab is a chimeric monoclonal antibody that targets TNF-α, which leads to a disruption of the inflammatory cascade. On the other hand, as TNF-α may regulate interleukin (IL)-1, IL-6, IL-8 and granulocyte and monocyte CSF (GMCSF), its blockage by Infliximab may interfere with bone marrow-derived cell proliferation and maturation.

Drug induced neutropenia is a rare complication of Infliximab and is associated with a high rate of infectious complications and an increased mortality rate. Blood cell parameters both pre- and post- Infliximab infusion should be monitored particularly in the early stages following initiation of anti-TNF agents.

71 years-old male presents to our institution with progressive esophageal dysphagia. The patient was initially referred in 2005 to a gastroenterologist due to dysphagia, chest pain, and regurgitation. At that time, imaging findings revealed a dilated esophagus. He was placed in PPI’s for symptomatic relief while workup was completed. Due to partial resolution of symptoms, the patient did not continue evaluation and was lost follow up. Fourteen years later, he presented to our institution with inability to ingest liquids or solids. Barium esophagogram brought from another institution showed the classic bird’s beak appearance of achalasia. Chest X-ray performed while in the ED showed severe widening of the mediastinum. Upper GI endoscopy was performed which demonstrated a long and tortuous esophagus. Subsequent high-resolution manometry showed absence of peristalsis and esophageal contractions with swallows. These findings were consistent with, but not diagnostic of, achalasia type 1 by Chicago classification v3.0 since the manometry catheter was unable to traverse the LES due to the altered esophageal anatomy. The diagnosis was made using radiological, clinical and available manometrical criteria. The patient underwent Heller myotomy with partial fundoplication with full resolution of the symptoms.

Achalasia is an uncommon disease with an annual incidence of 1.6 cases per 100,000 individuals. Given the rarity of the disease most primary care physicians will rarely encounter this disease in the daily practice. It is important to maintain a low threshold of suspicion in patients presenting with signs and symptoms of achalasia. Prompt identification and rapid treatment diminish the long term sequelae and potential complications. Finally improving outcomes and, more importantly, quality of life.

**Abstract 258 Figure 1** White blood cell trend both pre- and post-infliximab infusion.

**259 UNCOMMON CASE OF ACHALASIA IN A PATIENT WITH LONG STANDING DYSPHAGIA**

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Case Report Achalasia is characterized by lack of relaxation of the lower esophageal sphincter. The most common presenting symptom is dysphagia to solids and liquids. Since the disease is uncommon and patients may be able to compensate to early milder symptoms, the diagnosis may be delayed for years. We present a rare case of worsening dysphagia for more than a decade that highlights the importance of a high index suspicion and due diligence in the diagnosis and management of this disease.

**260 A CASE OF RECURRENT PANCREATITIS SECONDARY TO PANCREAS DIVISUM**

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Case Report Pancreas divisum is a common congenital anomaly of hepatobiliary system with an incidence of 5%-14%. It occurs due to failure of fusion of dorsal and ventral ducts of pancreas resulting in openings at abnormal positions causing pancreatitis. The diagnosis is challenging and if untreated can lead to pancreatic failure.

A 66 years old AAM with PMH of HTN, DM, CAD and recurrent pancreatitis presented with 4 days of epigastric pain. It was deep, aching without radiation and aggravated by food. He denied vomiting, diarrhea, fever or jaundice.

He had multiple admissions for similar complaints over last 4 years which were treated as acute pancreatitis. He reported anorexia and weight loss. He denied alcohol intake.

Physical exam revealed epigastric tenderness without any palpable mass.

Lab findings showed TLC 7300, T.bili 0.96, ALT 9, AST 10, ALP 82, lipase 47 and TG 71.

USG Abdomen showed cholelithiasis without cholecystitis or biliary dilatation. CT abdomen revealed interstitial edematous pancreatitis with peripancreatic fluid. MRI abdomen revealed pancreas divisum. The major pancreatic duct drained
A Rare Case of Hepatocellular Carcinoma with Cameron Lesions: Obscure Gastrointestinal Bleed Presenting with Iron Deficiency Anemia

Case Report

Hepatocellular carcinoma (HCC) is a common malignancy and the most frequent sites of metastasis include lungs, bone and brain. Intra-cardiac involvement rarely develops and has a poor prognosis. We discuss an unusual metastasis of HCC into the right atrium extending to the left atrium in a patient with Hepatitis C.

A 66-year-old AAF with no known medical history, presented with epigastric pain for 1 week. She had decreased appetite and 10 lb weight loss in 2 months. She denied vomiting, melena, hematemesis, dysphagia, fever or cardiac symptoms like SOB, chest pain and orthopnea. The physical exam was unremarkable. Lab studies showed: WBC 12.6; Hb 12.5; Pt 155; ESR 76; PT 16; INR 1.4; total protein 8.6; albumin 3.0; AST 110; ALT 57; ALP 100; T.Bili 1.2 and direct 0.45. HepC Ab was positive. HepB sAg and Ab were negative. AFP: 227(N: 0–5.8). EKG was normal. CXR showed right lung nodule suggestive of metastasis. CT triple phase showed 7 cm heterogeneous liver mass concerning for HCC with extension to the IVC, SVC, right and left atrium along with non-calciﬁed 11 × 19 mm pulmonary nodule. TTE showed a well-circumscribed mass protruding from IVC to right atrium and extending through atrial septum into left atrium through fossa ovalis. Patient was not deemed to be a surgical candidate and refused medical management considering the poor prognosis. 2 months later, she was diagnosed with COVID-19 and died of respiratory failure. No symptoms of CHF were present even at later stage.

Discussion

The prevalence of HCC is about 180 million worldwide with rising incidence. It is associated with poor prognosis with median survival of 4–7 months. The prognosis with cardiac involvement is worse with median survival of 1–4 months. The possible complications include HF, TR, TS, LVOT obstruction and SCD. The symptoms of dyspnea and edema are generally seen with cardiac involvement. The tumor invades IVC and reaches cardiac cavities. In spite of this, cardiac metastasis is still an unusual presentation of HCC. Our case is of a patient of HCC with intracardiac metastasis and with no cardiac symptoms. The case highlights that heart involvement should be suspected with HCC and screening TTE should be done even in absence of cardiac manifestations.
**PLUMMER-VINSON SYNDROME PRESENTING AS CHRONIC DIARRHEA IN A YOUNG BLACK WOMAN**

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**Introduction** Plummer-Vinson Syndrome (PVS) is a triad of iron deficiency anemia (IDA), esophageal webs and dysphagia. The prevalence is around 1 in 1,000,000. It is found in middle aged women between 40 to 50 years and is rare before 30. It usually presents with fatigue, SOB or dysphagia.

**Case Report** A 21-year-old AAF presented with difficulty swallowing solid food. The symptoms progressed gradually where she could take only a soft diet. She denied nausea, vomiting, hematemesis, heartburn or dark color stools. She had a similar episode 2 years back diagnosed as pill esophagitis. Her medical history was significant for IDA due to menorrhagia. She denied any history of alcohol, smoking, or illicit drug use. She denied any medication use. She had no history of PUD or collagen tissue disorder. Her family history was unremarkable. At presentation, the physical exam was significant for pale conjunctiva and flow murmur. Lab results showed Hb of 5.5 g/dl, Hct of 23 and Mentzer index of 15. PBF showed hypochromic and microcytic cells. Serum iron was 3 μg/dl, ferritin 3 ng/ml, TIBC 394 μg/dl, and transferrin saturation of 3%. LFT and RFT were unremarkable (AST 21 IU/L, ALT 5 IU/L, BUN 7 mg/dl, and creatinine 0.44 mg/dl). CXR was normal with no acute abnormality. Barium Esophagogram demonstrated contrast pooling in the piriform sinuses with no passage into the esophagus. EGD showed 3 moderate to severe stenosis in the esophagus. The patient underwent blood transfusion and balloon dilatations over the guidewire to a dilatation of 7 mm. She was given iron supplementation. After 1 month, she underwent repeat dilatation to 10 mm. She had symptomatic relief and her Hb improved to 8.2 g/dl at 1-month follow up.

Plummer-Vinson Syndrome is a precancerous condition with high potential for malignancy. The pathogenesis is speculated to be due to iron-deficiency as there has been improvement with iron supplementation. The early management is crucial as these webs can progress to SCC. The case emphasizes the importance of evaluating patients with dysphagia and be cautious of red flag signs. It highlights that although PVS is uncommon before the age of 30 years, it should be considered in the differentials of dysphagia. Early diagnosis is important and prognosis is usually good with iron supplementation alone or in combination with mechanical dilatation.

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**CHRONIC DIARRHEA DUE TO HOMOZYGOUS DIACYLGlycerol O-acyltransferase 1 MUTATION**

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**Case Report** A 4-week-old female, born at 38 weeks presented with 1 kg weight loss, fussiness, fever, vomiting, and diarrhea. Her diarrhea started at birth with 6 to 8 greenish large volume stools per day. Diarrhea resolved when not fed. She was breastfed and supplemented with peptide-based formula. On examination, she had no dysmorphic features and was dehydrated.

Laboratory tests revealed metabolic acidosis, hyponatremia, hypoalbunemia, and normal cholesterol. Stool alpha-1-antitrypsin was elevated, fecal PCR multiplex, fat, reducing substances were negative and fecal elastase was normal. Attempts to continue amino acid-based formula were unsuccessful and she was transitioned to parenteral nutrition.

Upper endoscopic biopsies showed partial duodenal villous atrophy, stains were negative for microvillus inclusions by electron microscopy. Whole exome sequencing was positive for diacylglycerol O-acyltransferase 1 (DGAT1) gene mutation, variant c.751+2T>C homozygous. Her symptoms were resolved with a 3% fat formula and a low-fat diet.

DGAT1 is an enzyme that helps to catalyze the formation of triglycerides from diacylglycerol and fatty acyl-CoA. This is the final committed step of triglyceride digestion before they are packaged into chylomicrons. Toxic accumulations of DGAT1 lipid substrates in the epithelium can lead to the destruction of the enterocyte. Intestinal biopsies in DGAT 1 deficiency showed dermal fibroblasts and intestinal organoids with altered lipid metabolism and have increased susceptibility to lipid-induced cell death.

There are five different types of DGAT1 gene mutations. These patients have severe congenital diarrhea and protein-losing enteropathy. There has been a difference in phenotype presentation for DGAT1 deficiency with different laboratory findings and outcomes for patients with the same mutation. The key intervention is the introduction of a fat-restricted diet which prevents the development of a full-blown protein-losing enteropathy.

This child did well on the low-fat formula with the resolution of diarrhea and protein-losing enteropathy.

DGAT1 deficiency is a rare disorder and whole exome gene sequencing helps in identifying it sooner so that appropriate management can be instituted.

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**THE INFLAMMATORY BOWEL DISEASE CONUNDRUM: ESTABLISHING A DEFINITIVE DIAGNOSIS IN CASES WITH OVERLAPPING FEATURES**

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**Case Report** The differentiation of Crohn’s disease (CD) from ulcerative colitis (UC) can be challenging and establishing an exact diagnosis is essential for correct treatment. Our patient was diagnosed with inflammatory bowel disease (IBD) at 10 years old after a 4-month history of painful bloody diarrhea and 15 pounds weight loss. Investigations showed iron deficiency anemia, elevated ESR, CRP and p-ANCA. Endoscopy showed pancolitis with superficial erosions, shallow ulcerations, and exudates. Biopsy showed prolitisis, colitis, diffuse enteritis without granulomas. Duodenal and stomach biopsies also showed enteritis with ulceration and gastritis. The patient met the criteria for phenotypic UC given no granulomas, perianal disease, segmental colitis, rectal sparing, cobblestoning or strictureing of the terminal ileum (TI), and normal growth parameters. She was treated with mesalamine, lansoprazole, azathioprine, and prednisone but had multiple flare-ups in the next two years despite
treatment with infliximab, adalimumab, vedolizumab, and ustekinumab. Repeat colonoscopies at age 12 and 14 years showed left-sided colitis without granulomas with normal transverse, right colon, and TI. The next year she had an abdominal abscess and perforation requiring a subtotal colectomy. Biopsy showed severe diffuse chronic active intermediate colitis, superficial and deep perforating fissuring ulcers, transmural lymphoid aggregates, scattered transmural multinucleated giant cells, mild lymphoplasmacytosis, and occasional pseudopapillae. The rectal segment showed severe diffuse chronic active intermediate proctitis with peri-proctitis.

Although the patient's IBD was consistent with UC at the time of initial diagnosis, the presence of transmural inflammation, intra-abdominal abscesses, perforation was more consistent with a diagnosis of CD.

This case demonstrates we should always be cognizant of diseases with overlapping features and open to reevaluating our prior diagnoses. Multiple modalities help to distinguish CD from UC, p-ANCA is identified in 75% cases of UC and up to 20% in CD. Patients with CD limited to the colon have a higher prevalence of p-ANCA. Therefore p-ANCA is not useful in differentiating between UC and Crohn's colitis.

**Purpose of Study**
The Department of Veterans Affairs (VA) created a national database to optimize treatment and screening of Hepatitis B (HBV). A previous study at the Memphis VA Medical Center (VAMC) measured quality metrics of HBV patients on antiviral therapy. This study observed quality measures in HBV patients not receiving antiviral treatment.

**Methods Used**
The VA national database included all patients in the Memphis area with positive Hepatitis B surface Antigen (HBsAg) tests. The VA Computerized Patient Record System was utilized to measure: linkage to care; hepatocellular carcinoma (HCC) screening, Hepatitis A antibody (HAV) screening, and hepatitis D antibody (HDV) screening. HCC screening was defined as imaging every six months by ultrasound, computerized tomography or magnetic resonance imaging. Deficient patients were called or mailed letters. The rates of delinquency before and after intervention were recorded.

**Summary of Results**
44 patients received antiviral therapy. 74 patients with HBsAg were not on antiviral therapy. Of these 74, 10 were excluded due to false positive tests. False positive HBsAg tests were associated with recent influenza or HBV vaccinations. Of the remaining 64 patients, 44 were immune/vaccinated for HAV, 47 were screened for HDV, 36 had HCC screening, and 45 were linked to care. During the study, 6 more patients were excluded from the final results: 1 patient had a brief reactivation of HBV during Hepatitis C treatment which resolved; 3 were found to be Hepatitis B Core antibody negative; 1 was initiated on treatment; 1 refused follow-up. Of the 58 remaining patients, 48 were immune/vaccinated for HAV, 47 had been tested for HDV, 41 were up to date on HCC screening, and 49 were linked to care. 9 did not respond to telephone or letter.

**Conclusions**
Intervention improved the percentage of Hepatitis B patients linked to care and quality measures. This study shows the promise of utilizing a national database to guide quality improvement studies.
drip (5000 U BID) due to imminent AKI. He developed upper GI bleeding from the ampulla along with hemorrhage in the pancreas. Heparin was discontinued and he underwent splenic artery embolization. Two weeks after the intervention, he developed significant GI bleeding requiring several units of blood transfusion shortly after low-dose enoxaparin (30 mg) was restarted. Enoxaparin was withheld during his subsequent course of hospital stay. A repeat CT abdomen 4 weeks later showed resolution of SVT.

Conclusion High risks of bleeding and unclear clinical benefit preclude the use of anticoagulation for SVT in patients with AP.

Case Report Cannabinoid Hyperemesis Syndrome (CHS) is a diagnosis occasionally seen with chronic marijuana users. It presents with nausea, vomiting, and abdominal pain that improves with cessation of marijuana and hot showers. Treatment involves the use of an antiemetic, a PPI, and a pain medication. This report presents a case of severe, refractory CHS with resolution of abdominal pain and nausea after treatment with topical capsaicin. Literature shows that refractory CHS is sometimes managed with antipsychotics such as haloperidol or olanzapine (Sontineni et al., 2009). Unfortunately, these antipsychotics are known to cause many unwanted side-effects. This case report suggests that topical capsaicin may be an effective option for refractory CHS patients.

A 21-year-old man presented to the ED with abdominal pain, nausea, and vomiting. He was given Ciprofloxacin, Flagyl, and Phenergan and was discharged the same day. Three days later, the patient presents to the ED with the same complaints and was admitted. The patient’s physical exam was unremarkable. He was treated with Morphine, Oxycodeone, Protonix, and Ondansetron. CT imaging of the abdomen and pelvis was unremarkable. The patient mentioned that ‘taking a hot shower’ provides relief. CHS was suspected and urine toxicology came back positive for cannabinoids. Topical capsaicin cream 0.075% was applied in his lower abdomen, with reapplication every 4 hours. The patient reported significant improvement in his symptoms. He was discharged home with a prescription and was encouraged to discontinue marijuana use.

Discussion CHS is becoming more prevalent due to the legalization of marijuana throughout the United States. The approach in treating this is with opioid analgesics and antineutrals, but unfortunately the percentage of symptomatic relief among patients isn’t impressive. This study showed that topical capsaicin provided significant relief, therefore highlighting a possible treatment solution. There is little data in literature pertaining to the efficacy of topical capsaicin for CHS treatment. Therefore, this case report hopes to bring awareness on this promising alternative for CHS treatment. Other advantages of topical capsaicin are that it’s inexpensive, has low risk for side-effects, and it is well tolerated.
preliminary study investigates the utility of VR in patients with functional nausea and vomiting and abdominal pain.

Methods Used Patients referred to an academic Neurogastroenterology and Motility Center at the Texas Tech University Health Sciences Center – El Paso from August to October 2020 with nausea, vomiting and/or abdominal pain not adequately responding to standard treatment were considered. After full disclosure and review of the VR programs, patients underwent a 30 minute to 1 hour VR session once or twice weekly and were coached regarding which programs to choose. Ongoing standard medical treatment was continued. A questionnaire grading symptoms as improved, same or worse was administered to the patients after each session.

Summary of Results Four female patients aged 29 to 56 with nausea and abdominal pain were enrolled in this study with the following diagnoses: two rumination syndrome, one gastroparesis and one functional dyspepsia. All patients had at least one VR session during the study period. Results: Abdominal pain: three patients (75%) reported milder or no abdominal pain after the sessions compared to their baseline grading while one (25%) reported moderate abdominal pain. Nausea: three patients (75%) reported improvement in their nausea after the sessions compared to baseline while one (25%) with rumination syndrome noted worsening. Adverse effects reported were transient blurred vision, nausea and dizziness. All patients when questioned after completing the sessions and would consider this approach again and also recommend the treatment to other patients.

Conclusions These preliminary results indicate that VR may be an effective as well as a safe adjunct in the management of patients with refractory functional nausea, vomiting and abdominal pain. A larger study with more treatment periods and longer follow-up to assess outcomes is being conducted.

As legislature changes the increasing incidence of Cannabinoid Hyperemesis Syndrome (CHS) may be seen. It is found young adults who have a history of daily long term use. Though the mechanism of CHS is yet unknown, the clinical course is well described in the literature. It typically involves a Prodromal Phase, a Hyperemetic phase and a Recovery phase. Patients usually seek medical advice during the dramatic nausea and vomiting that occurs during the hyperemetic phase. Typically patients are found to have multiple emergency room admissions before diagnosis is made and suffer symptoms until diagnosis is made as first line antipotemics which are commonly not effective in resolving symptoms. Salvage therapy with typical antipsychotics such as haloperidol has been demonstrated to show greater efficacy in management of CHS. In cases such as ours, its early use in patients with a suspicion of CHS whose symptoms are refractory to first-line treatment may allow earlier resolutions of patient symptoms, speed the formulation of a diagnosis and reduce the level of unnecessary testing in patients with CHS.
Acute pancreatitis is a sudden inflammatory process of the pancreas leading to acinar cell death. One of the known complications is a pancreatic pseudocyst. We report the first case of pancreatic pseudocyst secondary to a jellyfish sting.

A previously healthy 10-year-old Caucasian developed crampy right lower quadrant and epigastric abdominal pain, along with multiple episodes of non-projectile emesis of gastric content, anorexia, and fatigue within 24 hours of being stung by a jellyfish. There was no history of trauma or medication use. Laboratory testing showed elevated lipase, leukocytosis with left shift, thrombocytosis, and elevated CRP. CT abdomen showed pancreatic phlegmon. CXR showed right lower lobe pneumonia. Treatment included IVF, Piperacillin/Tazobactam, and Vancomycin for the treatment of pneumonia. After 7 days of therapy, ongoing signs of inflammation led to the addition of Levofloxacin followed by Meropenem 2 days later. 12 days after onset, she developed a fever of 38.3°C. Repeat testing showed worsening leukocytosis and CRP. A repeat CT abdomen and chest demonstrated a pseudocyst measuring 13.5 cm and pancreatic necrosis. Laboratory testing showed a serum lipase of 1300, metabolic acidosis, hypoalbuminemia, and mild transaminitis. The patient also had normocytic anemia, leukocytosis with a neutrophilic predominance, and elevated CRP. Lipase was repeated the next day and was found to be 1212. Amylase was 127. The urine and blood culture were negative.

CT abdomen showed acute pancreatitis and a pseudocyst measuring 13.5 cm. Laboratory results showed elevated lipase and inflammatory markers. The patient was started on IV antibiotics, kept NPO, and PPI. MRCP showed large simple appearing cystic structure arising from the distal body of the pancreas measuring up to 11.6 × 10.4 × 12.4 cm, which appeared to be arising from the pancreatic duct. The patient was extensively investigated, and all other causes of AP were ruled out. US Abdomen showed a large, lobulated low echogenic mass in the region of the pancreas consistent with a pancreatic pseudocyst, measuring at 12.7 × 7.5 × 7.7 cm, with noted internal echoes.

This demonstrates that acute pancreatitis may occur in association with a jellyfish sting. We conclude that acute pancreatitis should be considered in patients with abdominal pain and vomiting following a jellyfish sting.

**Conclusions**

GBC on the peritoneal and liver sides is associated with the worst outcomes. Peritoneal side tumors have similar survival to tumors located on the liver side for each T1-4 stage. MIS approaches do not have a negative impact on survival.
Case 57 year old female with a 16 year history of type 2 DM presents to the clinic with a history of nausea, vomiting, early satiety, abdominal fullness and bloating of some years duration. Laboratory tests were remarkable for an HbA1C of 8.2%. Prior upper and lower endoscopy showed no obstruction and no previous gastrical emptying study (GES) had been done. Upon further history taking, it was found that she started dulaglutide 1 year ago. A 4-hour GES was scheduled and showed 35% retention of isotope at 4 hours, indicating delayed gastric emptying (< 10% is normal). Dulaglutide was held for 4 weeks and symptoms resolved. A repeat GES showed 3% of isotope retained in the stomach at 4 hours, which is normal.

Discussion The diagnosis of GP requires evidence of delayed gastric emptying (GE) in the absence of mechanical obstruction. Prolonged DM (> 5 years) can result in GP due to irreversible neuronal damage from poor glycemic control and is irreversible. Drugs such as PPIs, levodopa, calcium channel blockers, marijuana, opiates, and GLP-1 agonists are also associated with delayed GE. GLP-1 agonists such as Dulaglutide act by binding to incretin receptors resulting in insulin release and glucagon suppression. Moreover, GLP-1 agonists inhibit antral and duodenal motility and increase pyloric pressure which slows GE. GLP-1 agonists are growing in popularity due to their convenient subcutaneous weekly dosing and their favorable weight loss side effect.

This report highlights the under recognized role of gastroparesis induced by GLP-1 agonists and how a detailed history is crucial in differentiating drug induced GP which is reversible in contrast to diabetic GP.

HEPARIN, THE SAVIOR FOR THE ACUTE MANAGEMENT OF HYPERTRIGLYCERIDEMIA
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10.1136/jim-2021-SRMC.276

Case Report A 52 year old male with past medical history of hypertension and Barrett’s esophagus presented for evaluation of hypertriglyceridemia at the request of his primary care physician. His symptoms included recent difficulty tolerating oral intake with associated watery diarrhea. Per labs from his primary care office two days prior, he had triglyceride levels of greater than 1800 and lipase of 121. Upon admission, his blood work was significant for a lipase level of 61 and triglyceride level further elevated to 2900. On bedside exam, the patient was resting comfortably and endorsed mild abdominal pain with deep palpation in the epigastric region. He was hemodynamically stable and admitted for further management and workup of possible pancreatitis. He was started on aggressive fluid resuscitation and pain control. As the patient remained a very low bleeding risk, he was also started on heparin drip. Less than twelve hours later, follow up triglyceride levels had decreased to 1200, and the patient denied any further symptoms. As he remained asymptomatic with down-trending triglyceride levels, the heparin drip was discontinued, and the patient was discharged on oral medications of atorvastatin and fenofibrate.

Discussion This case illustrates the potential of rapid reduction of severe levels of triglyceridemia via monotherapy in a controlled setting. Oral medications including fibrates or statins are known to produce similar effects over longer settings of time. There are currently no established guidelines for the acute management of severe hypertriglyceridemia. Those that present with acute pancreatitis are treated with the standard management of nothing by mouth, intravenous fluids, and pain control. Hypertriglyceridemia-induced pancreatitis has several other effective treatment modalities that are seen in literature. Insulin and heparin are frequently used in these cases, mainly due to their effect on the LPL enzyme which assists in removing triglycerides from plasma.

Unfortunately, many cases of primary hypertriglyceridemia may present either spontaneously or in patients with poor medication compliance. Therefore, further investigation into insulin or heparin therapy to reduce severely elevated TG levels in the acute setting would prove beneficial.

277 GLUTEN-FREE DIET INEFFECTIVE IN REMISSION RESPONSE OF EOSINOPHILIC ESOPHAGITIS IN CHILD ALSO DIAGNOSED WITH CELIAC DISEASE

Purpose of Study Celiac Disease (CD) and Eosinophilic Esophagitis (EoE) are two distinct chronic immune mediated gastrointestinal disorders with unique differences in clinical and histopathological features. Numerous studies have indicated an association between these two diseases with increased prevalence of CD in patients diagnosed with EoE. The co-treatment of these diseases, however, has not been well described. The purpose of this report is to examine a case of a child diagnosed with both CD and EoE, placed on a gluten-free diet and proton-pump inhibitor (PPI) without remission of EoE on repeat endoscopy.

Methods Used The case report included a patient diagnosed with both CD and EoE based on endoscopy and histopathological findings treated with a gluten-free diet and PPI. The patient’s presentation, laboratory results, and histopathology reports of esophageal and duodenal biopsies were reviewed.

Summary of Results In this case report, we describe an 11-year old male who presented with esophageal food impaction. During endoscopic procedure, the patient was found to have EoE on visualization of the distal portion of the esophagus confirmed with histopathology report. The patient was also noted to have evidence of villous blunting in the duodenum consistent with CD which was confirmed by elevated celiac antibodies. While a strict gluten-free diet is the only effective therapy for CD, there are several therapeutic options, such as PPI, swallowed topical steroids, and dietary elimination therapy for EoE, one of which includes gluten containing foods. The patient’s parents opted to try a PPI and gluten-free diet for treatment of EoE and CD. This was continued for about 3 months at which point upper endoscopy was repeated. There was improvement in CD based on both lab work and histopathology of duodenal biopsies, but EoE did not show remission. This suggests that a gluten-free diet alone may not be adequate for the treatment of both EoE and CD.

Conclusions This case report suggests that a gluten-free diet alone and/or PPI may not be enough to induce remission of EoE in patient also diagnosed with CD and that further food elimination diet or topical corticosteroids may be warranted.
A CASE OF EOSINOPHILIC COLITIS AND CMV POSITIVE MENETRIER DISEASE

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Case Report Protein-losing enteropathy (PLE) is characterized by excessive loss of protein into the gastrointestinal tract due to impairment of the mucosa. This case report describes the clinical course of a patient diagnosed with eosinophilic colitis coexisting with Ménétrier disease.

A 5-year-old male presented with constipation, postprandial emesis and abdominal distention for 2 weeks. Physical exam findings were abdominal distention and tenderness. Blood workup revealed absolute eosinophilia. Administration of polyethylene glycol and milk of molasses enema resulted in worsening abdominal distention. Later, he developed scrotal and penile edema. Serum albumin decreased from 2.2 g/dL on admission to 1.1. Urinalysis, stool PCR multiplex, fecal elastase and anti-TTG, stool ova and parasites, HSV antigen and antibodies were negative. Fecal alpha-1-antitrypsin was elevated. Endoscopy showed candida esophagitis and erosive gastritis with rugal hypertrophy, suspicious for Ménétrier disease. Cytologic evaluation reported eosinophilic infiltration of the esophagus, stomach, and ascending colon to rectum, sparing cecum and duodenum. No fungal hyphae or cytopathic changes of CMV were demonstrated. Further blood work revealed negative HIV and CMV IgM, elevated CMV IgG and changes of CMV were demonstrated. Further blood work revealed negative HIV and CMV IgM, elevated CMV IgG and low level CMV viremia on serum PCR. Specific IgE blood test positive to egg, wheat, and milk.

Intravenous albumin infusion and treatment for erosive gastritis, constipation and six-food elimination diet resulted in improvement of symptoms.

Ménétrier disease is characterized by irregular hypertrophic gastric folds and epithelial hyperplasia causing leakage of protein into the lumen.

The disease is idiopathic, associated to Helicobacter pylori in adults and CMV, HSV and rarely to H. pylori in children.

The differential diagnoses include inflammatory bowel disease, eosinophilic gastrointestinal disorders, celiac disease and lymphoma. The diagnosis requires an elevated stool alpha-1-antitrypsin and a full gastric mucosal biopsy.

PLE is rare, more so, the finding of two entities in a patient. This case report shows the importance of a thorough work up as different etiologies may explain the patient’s presentation.

TOTAL PARENTERAL NUTRITION, CHOLESTASIS, AND GALLSTONES IN INFANCY: A RARE CASE

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Case Report Cholelithiasis is rare in infancy, although the rates of diagnosis have increased as a result of the widespread use of ultrasonography in neonates. Most cases of neonatal cholelithiasis are due to hemolysis or an abnormality in the biliary tree or ileal tract; TPN administration is a lesser-known risk factor for the development of this condition. This case presents an infant who developed gallstones due to cholestasis secondary to TPN administration.

A 3-year-old girl presented to the emergency department with severe abdominal pain, which she rated as 8 of 10 in severity. The onset of the pain had occurred that morning during a long car ride. She described the pain as crampy and reported that it had begun in the right upper quadrant but had since become diffuse throughout the abdomen. Related symptoms included reduced appetite and refusing to eat or drink; the mother also reported that the girl had foul-smelling urine. The patient denied fever, headache, nausea, vomiting, diarrhea, rash, or difficulty breathing. Her medical history was notable for gastrochisis (which had been surgically repaired on day 9 of life) that had been complicated by a 10-cm ventral hernia and cholestatic jaundice secondary to prolonged TPN administration in NICU. The cholestatic jaundice had resolved, but the hernia remained unresolved. The patient was admitted to the hospital and was ordered to have nothing by mouth with nasogastric tube placement. Laboratory studies were notable for an elevated white blood cell count. An ultrasonogram of the abdomen revealed cholelithiasis without bowel obstruction. One day following hospital admission, a surgical consultant recommended laparoscopic cholecystectomy and hernia repair. The procedure was performed the following day, during which cholesterol gallstones were found, but without any other complications. The patient was evaluated the next day, and discharge was recommended with a follow-up visit in 2 weeks.

Recognition and treatment of cholelithiasis secondary to TPN is rare in such young patients, clinicians should keep these causes in the list of differential diagnoses when presented with an infant with such symptoms and a history of prolonged TPN administration.
steadily increasing, likely due to more frequent imaging and endoscopy. NETs are often slow-growing and have a non-specific presentation which can make the diagnosis challenging. Patients may be asymptomatic, have obstructive symptoms, such as in this case, or report symptoms related to tumor production of bioactive substances, as in carcinoid syndrome. NETs may secrete chromogranin A and synaptophysin which can be used for confirmation or surveillance of disease. Patients with localized disease are often treated with surgical resection. Somatostatin analogs and cytoreductive surgery are usually reserved for metastatic disease. Peptide receptor radionuclide therapy (PRRT) has emerged as the therapy of choice for progressive disease on somatostatin treatment. Given the increased incidence and often-delayed diagnosis of NETs, it is paramount that clinicians recognize and understand this disease. Early efforts should be made to diagnose and manage NETs using a multidisciplinary approach.

**Abstract 281**

A ROOT CAUSE FOR DYSPHAGIA: VEGETABLE FOOD IMPACTION MIMICKING ESOPHAGEAL MALIGNANCY

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10.1136/jim-2021-SRMC.281

**Case Report** Food bolus impactions are medical emergencies that are usually meat associated, with vegetables making up less than 5% of documented cases. Structural abnormalities including reflux esophagitis may predispose to impactions, and edentulous patients or those with poorly fitting dentures are at increased risk for impaction due to ineffective chewing and decreased tactile sensation while swallowing. We present an 82 year old woman with dementia and edentulism presented with acute onset dysphagia to solids for 3 days. On examination she had normal vital signs. Her oropharyngeal exam showed loose fitting dentures, and her thyroid exam was normal. A barium esophagram showed a large, at least 3 cm well-defined round lesion within the distal esophagus (figure 1A), concerning for esophageal malignancy. Upper endoscopy showed a 3.5 cm diameter orange-brown disc-shaped foreign body in the distal esophagus (figure 1B) that was removed with a net retrieval basket. On inspection the foreign body was consistent with a slice of raw carrot (figure 1C). Two months after her upper endoscopy her weight was stable with no further dysphagia. A repeat esophagram showed a 2 cm hiatal hernia and no evidence of a distal stricture. We present this case to highlight a minority etiology for food bolus impaction and to highlight underlying structural complications that can predispose to impactions.
IT’S COMPLICATED: MONITORING AFTER PARACENTESIS

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10.1136/jim-2021-SRMC.282

Case Report Abdominal paracentesis is a diagnostic and therapeutic procedure deemed safe. Complications are seen in 1% of cases, delayed hemoperitoneum from preceding large-volume paracentesis is extremely rare. Its presentation is subtle and confers mortality rates >70%. High index of clinical suspicion for prompt diagnosis is possible with awareness. This is a case where delayed hemoperitoneum presenting 72 hours after large-volume paracentesis was successfully managed with conservative measures.

A 60-year-old male with class B Child-Pugh cirrhosis secondary to alcohol abuse presented with 3-weeks of bilateral lower extremity edema extending to scrotum and increased abdominal girth. Physical examination revealed a globose, tense distended abdomen without tenderness to palpation, + fluid wave, and bilateral pitting edema. Ultrasound-guided paracentesis in the left lower quadrant yielded 5.6 L of clear, ascitic fluid compatible with portal hypertension. No hematomas were observed, rapid symptomatic relief was achieved, and albumin was replaced. Three days later the patient referred mild, diffuse abdominal discomfort with a hemoglobin drop to 6.5 g/dL from 10.3 g/dL without evidence of hematomas or bleeding. He was hemodynamically stable, 1 unit PRBC and 2 FFP transfused with resulting hemoglobin >7 g/dL. Abdominal imaging revealed large volume ascites and high-density fluid suggestive of hemoperitoneum. Serial hemoglobin levels remained stable and no further transusions warranted. Given tense refractory ascites with associated shortness of breath, patient required two paracentesis which demonstrated blood-tinged, ascitic fluid and provided symptomatic relief. Patient was discharged home with spironolactone and furosemide in 5:2 ratio.

Delayed hemoperitoneum is believed to occur secondary to a rapid drop in intraperitoneal pressure following large fluid removal that cause mesenteric varices to rupture. Common symptoms include vague abdominal discomfort, distention, and shock. It may require aggressive transusions, exploratory surgery, or transjugular intrahepatic portosystemic shunts. Prompt recognition of this complication can prevent invasive intervention and is critical due to its high mortality rate. Close surveillance in these patients, lower-volume paracentesis, and slower drainage of ascites is recommended.

AMBER EYES: A TALE OF A CHOLEDOCHAL CYST

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10.1136/jim-2021-SRMC.283

Case Report Despite abdominal pain being a common pediatric complaint, choledochal cysts must be considered when a history includes jaundice and abdominal mass. Choledochal cysts are defined by biliary tree dilatation and obstruction. This disease presents most often in infancy and childhood with an incidence of around 1 in 100,000.

A previously healthy 10 year old girl presented to her doctor with 2 weeks of abdominal distension and scleral icterus. Her initial work up revealed a direct hyperbilirubinemia, alkaline Phosphatase of 753 U/L, Aspartate Aminotransferase of 291 U/L, Alanine Aminotransferase of 222 U/L, and Gamma-Glutamyl Transferase of 633 U/L. Evidence of obstructive jaundice led to an abdominal ultrasound. This revealed dilatation of the common bile duct, gallbladder, and intrahepatic bile ducts. Magnetic Resonance Cholangiopancreatography confirmed a Type IVa choledochal cyst. She underwent Choledochal Cyst Excision and Hepaticojejunostomy.

Although a rare etiology in school age children, choledochal cysts need to be considered for this presentation. Choledochal Cysts should be recognized early with rapid intervention to prevent lifelong complications including liver failure and cholangiocarcinoma. An abdominal ultrasound is the preferred initial screening test, followed by an MRCP with Eovist to further characterize the lesion.

A MYSERIOUS CASE OF CHRONIC DIARRHEA NOT RESPONSIVE TO TREATMENT

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10.1136/jim-2021-SRMC.284

Introduction Chronic diarrhea is a leading cause of health care utilization worldwide. While a specific diagnosis can be achieved in > 90% of patients, many do not have a conclusive diagnosis and more case reports are needed.

Case Report A 47-year-old man with type 2 diabetes, hypertension, substance abuse, chronic kidney disease, old stroke, and untreated chronic hepatitis C infection presented with chronic diarrhea for 1 year. He endorsed lower abdominal pain and bloating. During a hospital stay, he had been having constant diarrhea up to 12 times/day and complete loss of bowel control with observed loose stool every day. Despite extensive workup undertaken, there was no known cause of his chronic diarrhea. The empiric treatment regimens used in sequence included low-carb/lactose-free diet, rifaximin, Welchol, cholestyramine, pancreatic lipase, albendazole, and loperamide failed to improve his secretory diarrhea. His hypovolemia from ongoing diarrhea led to end-stage renal disease with severe metabolic acidosis and hyperkalemia needing
THE MYSTERY OF ANALGESIC REFRACTORY CHEST PAIN

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10.1136/jim-2021-SRMC.285

Case Report

Chest pain has a wide differential diagnosis. It is important for clinicians to recognize the atypical presentations of esophageal carcinomas as chest pain. We report a case of a patient with esophageal carcinoma resistant to analgesics who presented with chest pain only.

A 61-year-old male presented with sudden onset, severe, non-radiating right-sided sharp chest pain for 8 days that increased on deep breathing. The exam was unremarkable but for a heart rate of 119 bpm. Lab findings, cardiac enzymes, and chest radiographs were unremarkable. ECG revealed sinus tachycardia. CT angiogram and the duplex US of the abdomen were unremarkable. Abdominal CT showed thickened gastroesophageal junction, concerning an underlying neoplasm with lymphadenopathy and invasion of the pancreatic body. EGD findings showed a large, ulcerated, non-circumferential mass just below the GE junction at 45 cm with no bleeding. Another large, partially obstructing, the noncircumferential ulcerating mass was found in the distal esophagus, extending from 39 cm to 45 cm cm from the incisors along with esophageal mucosal changes suspicious for long-segment, Barrett’s esophagus and moderately differentiated adenocarcinoma of the GE junction, clinically categorized as stage IV, T4 N3 MX. The patient opted for palliative chemotherapy.

Metastatic cancer can masquerade as retrosternal chest pain. About 74% of these patients present with dysphagia, 17% report odynophagia, 57% report weight loss, and 21% report long-standing GERD. But when the patient presents with retrosternal or right upper abdominal pain it usually reflects the presence of unresectable, extensive disease.

Physicians should recognize that persistent pain that is disproportionate to the exam findings is an important clue for possible unresectable extensive malignant disease.

GALLBLADDER AGENESIS IN A MIDDLE-AGED FEMALE WITH NAUSEA AND RIGHT UPPER QUADRANT PAIN

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10.1136/jim-2021-SRMC.286

Background With an incidence of 1/6500 live births, gallbladder agenesis (GA) is a rare congenital condition. While majority of patients are asymptomatic, those who do develop symptoms present similarly to cholecystitis and have similar findings on ultrasound evaluation.

Case Presentation We present the case of a 35-year-old female with recurrent hospitalizations for 1 year due to postprandial nausea, vomiting and right upper quadrant pain. Vitals were stable except for tachypnea. Physical exam revealed epigastric...
and right upper quadrant abdominal tenderness on deep palpation. She had leukocytosis and right upper quadrant ultrasound showed contracted, thickened gallbladder with no ductal dilatation.

Patient underwent diagnostic laparoscopy with lysis of stomach/duodenal adhesions and ICG dye cholangiography. No gallbladder was noted during surgery. Post-operative CT scan (figure 1) confirmed absence of gallbladder. Subsequent Nuclear Medicine Hepatobiliary Duct System Imaging also confirmed it by nonvisualization of the gallbladder after 4 hours with a patent common bile duct.

Conclusion Due to the similarity with biliary colic and rarity of the disease, GA is often diagnosed intraoperatively, and this was the case with our patient.

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**Case Report**

A 45-year-old woman with a history of gastric bypass surgery, recently treated hepatitis C, alcohol and cocaine abuse presented to the Emergency Department with two weeks of epigastric abdominal pain associated with fevers, chills, diffuse myalgias, fatigue, early satiety, nausea, and dark-colored urine. Further review of systems was notable for a recent spider bite which was treated with 3 days of amoxicillin, followed by 6 days of oral Trimethoprim-sulfamethoxazole (TMP-SMX) 40–200 mg/5 mL suspension BID about 3 weeks. She was concurrently on a course of doxycycline for presumed endometritis. On physical exam, she had a positive Murphy’s sign, jaundice and scleral icterus. Laboratory studies showed AST 137 U/L, ALT 136 U/L, ALP 688 U/L, total bilirubin 4.6 mg/dl, and GGT 306 U/L. RUQ ultrasound was significant for gallbladder wall thickening and increased vascularity in the wall of the gallbladder. CT abdomen showed no evidence of gallbladder obstruction or cholelithiasis. MRCP confirmed no biliary obstruction. Work up for infectious, obstructive, autoimmune, and genetic etiologies was unremarkable. All potentially hepatotoxic medications were stopped but worsening of liver function continued, stabilized, and then began to decline over the course of her hospital stay. Liver biopsy revealed granulomatous hepatitis with irregular peri-granulomatous and background large-droplet steatosis that, in the setting of negative laboratory work-up, led to the diagnosis of TMP-SMX-induced granulomatous hepatitis with predominant cholestasis. She was started on ursodiol and discharged with outpatient follow-up.

**Discussion**

TMP-SMX-induced liver injury can range from mild liver enzyme elevations to acute liver injury. Most cases resolve quickly, within 2–8 weeks, but can last for months in cases of severe cholestasis. Some documented cases have resulted in the need for a liver transplant. In most cases sulfonamide is the causative agent, but trimethoprim also has associated cases of hepatotoxicity, so it is best to avoid switching to trimethoprim alone and identify the patient as allergic to TMP-SMX. Liver injury with the use of TMP-SMX is rare relative to the widespread use of this drug, and this case illustrates that even short courses may put a patient at risk.

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Health care research, quality improvement, patient safety and population health & precision medicine

Joint plenary poster session
4:30 PM
Thursday, February 25, 2021
Purpose of Study: Only 10% of adolescents admitted to the hospital receive the appropriate sexually transmitted infection (STI) screening recommended by the AAP. Lack of appropriate screening for STI in adolescents creates significant morbidity and elevates healthcare costs. Cases of gonorrhea, chlamydia (GC/CT) and syphilis have increased significantly since 2013. Youth often forego routine health visits and admission to the hospital may be their only interaction with healthcare providers. In our institution, screening is inconsistent and at the discretion of the physician. The aim of our quality improvement project was to increase screening among youth ages 16–18 years old admitted to the primary pediatric service in our children’s hospital.

Methods Used: Our study population included youth ages 16–18 years old admitted to Children’s Memorial Hermann Hospital from August 2019 to January 2020. A retrospective chart review from August to October 2019 determined baseline screening rates. The intervention took place in November 2019 and included 3 phases. First, residents were educated during their academic half-day and intern orientation regarding screening. Second, cue cards were placed on the mobile physician computer workstations, flyers were hung in the resident workroom and pocket reminder cards were handed out. Finally, our screening efforts were discussed with the hospitalists to emphasize compliance with the resident teams. When each patient was admitted, residents asked about sexual activity and offered screening during the social history which is conducted without the parents.

Summary of Results: A total of 167 patients were included in the study. 120 patients in the pre-intervention group and 47 patients in the post-intervention group. The screening rates for GC/CT, HIV, and syphilis prior to the intervention were 17.5%, 22%, and 21% respectively. The screening rates for GC/CT, HIV, and syphilis following the third PDSA cycle were 45% (p < 0.05), 36%, and 36% respectively.

Conclusions: Cumulative efforts to increase education for physicians and posting of visual cues improved STI screening rates. We demonstrated through our quality improvement project that screening rates for STIs can be improved in the hospital setting through simple and targeted education.

Case Report: Patient is a 69-year-old retired professor admitted to service for evaluation of extensive rash with multiple blisters, who was ultimately diagnosed with bullous pemphigoid. Patient had been bed-bound for the last two years without the issue being addressed. He was told he had diabetic neuropathy several years ago and gradually became non-ambulatory over a year. His physician advised him to follow up with his neurologist, but patient never made it due to transportation issues and poor social support system: his kids live out of town and he was having issues with his caregiver. Not satisfied with a diagnosis of diabetic neuropathy, we consulted neurology. Lumbar puncture and nerve conduction study confirmed chronic inflammatory demyelinating polyneuropathy (CIDP) & MRI of the cervical spine showed severe myelopathy. Patient had laminctomy and was discharged to acute rehab. 6 weeks later, patient was still unable to walk and had not finished IVIG treatments due to transportation issues.

Discussion: 1) Social determinants of health (SDH) are the conditions in which people are born, work, and reside that influence conditions of daily life. These factors include education, neighborhoods, social support networks, and access to health care. As patients present in the hospital, we often treat the medical diagnoses and look no further. However, it is ineffective to care for a patient without addressing SDH as these pose significant obstacles to treatments. For a true patient-centered approach, we must screen our patients for any underlying burdens as this influences health outcomes. 2) Independent patients who are capable of activities of daily living can gradually become non-ambulatory after a hospitalization, a fall, or without any obvious reason in the outpatient setting. Many times, patients nor their families question as to why they are not returning to baseline status. As medical providers, it is our responsibility to question this for them. Do not assume all patients have been evaluated to the fullest extent or have received diagnoses for each presenting ailment. Asking our patient why he had not walked in a year lead to further questioning and initiated the CIDP diagnosis after workup was delayed for over a year.

291 A NATIONAL STUDY ON PREVALENCE AND RACIAL DISPARITIES IN LUNG CANCER SCREENING

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Purpose of Study: Evaluation and analysis of lung cancer screening uptake, and whether racial disparities exist using the 2017 survey of CDC Behavioral Risk Factor Surveillance System (BRFSS) for subjects who fit the US Preventive Services Task Force (USPSTF) criteria.

Methods Used: The BRFSS 2017 collected lung cancer screening data from ten US states (Florida, Georgia, Maryland, Missouri, Nevada, Oklahoma, Vermont, Wyoming, Kansas, and Maine). Individuals who fit the USPSTF lung cancer screening criteria were included in this study (smoke 30 pack/year, 55 to 80 years old, and current smokers or have quit within the past 15 years). The dependent variable is the computed-tomography lung cancer screening within the past year. Adjusted associations between the dependent variable and the independent variables were analyzed using multivariate logistic regression.

Summary of Results: A weighted total of 1,301,248 subjects who fit the USPSTF lung cancer screening criteria were included in the analysis. 18% of subjects were screened (see table 1), the percentage increased compared to the reported
percentages (3–4%) in previous studies between 2010–2015. Racial disparities exist in lung cancer screening; the prevalence of screening in minorities was significantly less than Whites (Hispanic OR = 0.27, 95% CI 0.08–0.8) and Blacks OR = 0.28, 95% CI 0.09–0.84). Variables related to healthcare coverage showed a significant association with screenings, subjects without healthcare coverage had lesser odds of getting screening than those with coverage. Screening prevalence was different across included states; Florida had the highest uptake at 24%. On the other hand, Nevada had the lowest uptake at 11%.

Conclusions The prevalence of lung cancer screening improved in 2017 compared to prior years, however, it is still low. Racial disparities exist among screened individuals, directed screening programs for racial minorities may be beneficial.

**292** KEY TO BECOMING BETTER ANTIBIOTIC STEWARDS FOR SUSPECTED URINARY TRACT INFECTIONS IN CHILDREN ≥2 YEARS

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10.1136/jim-2021-SRMC.292

**Purpose of Study** The American Academy of Pediatrics developed a guideline for the diagnosis and management of UTI in febrile infants in 2011. The age of majority of patients seen for suspected UTI at Children’s Wisconsin(CW) is >2 years. Also, a nitrite positive(NP) urinalysis(UA) is highly specific for UTI. Guidelines regarding initiation of empiric antibiotic(EA) therapy in children ≥2 years with a nitrite negative(NN) UA are not clear. Assess current state of EA prescribing practices for children ≥2 years of age with suspected UTI in NN and positive leukocyte esterase(LE) UA.

**Methods Used** A retrospective chart review of patients aged 2–18 years who provided clean void urine specimens for suspected UTI from January to December 2019 and had paired UA & urine culture reports was performed. Patient demographics, documented/reported fever, UA results, urine culture report and EA therapy were obtained from electronic medical records. UTI was defined as urinary symptoms, pyuria on UA, and ≥50,000 colony forming units of uropathogen on urine culture report. Patients with a NP UA were excluded.

**Summary of Results** 1065 patients were included in the study (mean age 70 years, 89% female). 135 (12.7%) of all included patients met UTI criteria. 349 (32.8%) of 1065 patients had trace or 1+ LE on UA, of which 24 (6.9%) met UTI criteria. 116 (33.2%) of out of the 349 patients with trace or 1+ LE were started on EA for a suspected UTI, 104 (89.7%) of which did not meet UTI criteria. 57 (16.3%) of 349 patients had a temperature >38.0°C, of which 2 (3.5%) met UTI criteria.

**Conclusions** Initiating EA therapy for patients ≥2 years of age with trace or 1+ LE on UA resulted in overtreatment in 89.7% of cases. Fever was not a strong predictor of UTI in this group. Study findings suggest that providers can be better antibiotic stewards by waiting for the urine culture report prior to initiating EA therapy for patients with trace or 1+ LE and NN on UA.

**293** CONTRIBUTION OF BOARDING TIME TO EMERGENCY DEPARTMENT OVERCROWDING IN AN ACADEMIC HOSPITAL

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10.1136/jim-2021-SRMC.293

**Purpose of Study** The Joint Commission recommends boarding time (defined as elapsed time between deciding to admit an ED patient and transferring said individual to an in-patient floor) should be limited to four hours. Prolonged boarding times contribute to ED overcrowding and decrease patient safety. Our study aimed to understand how University Medical Center’s ED boarding time compares to this recommendation and if encouraging ED physicians to submit an in-patient bed request prior to IM consult would expedite patient transfer to an inpatient floor.

**Methods** Used The boarding time was calculated from the time that admission orders were entered into EMR to the time of transfer to an in-patient floor. Additional intervals were calculated based on other parameters noted: Time from Consultation to Transfer to In-patient Floor (1) and Hospital Bed Ready to Transfer to Inpatient Floor (2), and Medical records of 1,185 patients were reviewed. 957 were placed in the control group. 228 patients had an in-patient bed request (IBPR) placed by the ED physicians.

**Summary of Results** The average boarding was 4h 28m (95% CI 0h18m), exceeding the Joint Commission’s recommendation. There was no statistical difference between the boarding times of the IBPR and control group: 4h 24m (95% CI 0h26m) and 4h 29m (95% CI 0h22m), respectively. Despite this, the time interval designated (1) above was lower in patients with an IBPR than without (1h04m (06m) vs 1h36m (10m)). Though the IBPR aided in quicker admission of patients, this time-savings was not significant enough to affect the boarding time. Around 25% of the boarding time for all patients fell within the interval designated as (2) and was similar between the IBPR and control groups: 1h38m (08m) and 1h49m (17m).

**Conclusions** We recommend further examination of the components contributing to UMCNO’s prolonged boarding times. While there should be continued collaboration between the IM and ED services, it is beneficial to account for the contribution of other ancillary staff (i.e. transportation, laboratory/radiology) to this time interval. Additionally, we plan to compare how boarding time varies with time of year. Similarly, since our original data collection, more hospital beds are available for inpatient use and we hope to quantify if there any impact on boarding time with this addition.
294 RACIAL INJUSTICE PERCEPTIONS REAWAKENED BY THE COVID-19 PANDEMIC

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10.1136/jim-2021-SRMC.294

Purpose of Study Data shows minority communities experience profound impacts of disease severity and death if contracting COVID-19. We sought to understand the lived experience of the pandemic in an underserved, inner city minority community in Mobile County, AL.

Methods Used This qualitative study gathered data via Focus Groups and Key Informant interviews with community members, leaders, or advocates. The analysis team implemented a deductive rapid analysis of scribe notes from eight data collection events. The data addressed twenty-six basic analysis questions.

Summary of Results Issues of disparity, inequality, and racial bias were prominent in the discussions. Study participants stressed that African Americans have a long history of unequal and even harmful treatment from the healthcare system. This history means that many in the community are not surprised by the statistics of African Americans dying at a higher rate than whites. Community advocates are ‘curious’ about such reality and quizzical of why disparities persist in comorbidities that make the virus’ impact worse. Distress and frustration may keep persons from going to the hospital (even if experiencing COVID-19 symptoms) for fear of receiving subpar treatment simply because they are Black.

The experiences of bias run deep in the African American communities’ understanding of the COVID-19 pandemic. Experiences of disparity, in particular health disparities, are a norm in the community, with one participant describing the situation as ‘another storm to be weathered.’

Throughout the research process, a few participants conveyed their sense of déjà vu. They had communicated the reality of their communities many times before. Where we focused the conversation on the COVID-19 pandemic, the issues of socioeconomic disadvantage, inequality, distrust, and structural racism would surface whatever the topic to be addressed.

Conclusions Underserved African American communities experience sustained stress from inequality and injustice. The slow progression toward equity renders them vulnerable. It is necessary to address the fundamental drivers of inequity to foster resilience to any stressor, not just COVID-19.

295 ANTIVENOM USE OR OBSERVATION FOR PATIENTS WITH COPPERHEAD SNAKE ENVENOMATION?

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10.1136/jim-2021-SRMC.295

Purpose of Study Crotaline snake envenomation is a potentially serious medical condition affecting thousands of Americans each year. Snakes in the subfamily Crotalinae include, but are not limited to, copperheads, rattlesnakes, and cottonmouths. Variation in treatment of crotaline snakebites exists among physicians in the United States. In particular, managing copperhead snakebites is hypothesized to require minimal intervention, rarely requiring antivenom use and, even rarer, surgical intervention. This study assessed FabAV antivenom use and treatment outcomes for copperhead-envenomed patients in northeastern Oklahoma.

Methods Used A retrospective cross-sectional review examined electronic medical records (EMR) of patients with venomous snake bites from July 1, 2014 to August 31, 2019. Patient demographics, snake species, clinical presentation and lab results were collected. Associations between patient variables and treatment were evaluated using the χ², Median tests, and binary logistic regression.

Summary of Results Of 256 patients meeting inclusion criteria, 139 were envenomed by a copperhead. Compared to patients under observation (no antivenom, n=42), those treated with antivenom (n=97) were more likely to have ICU stays (χ²(1)=29.5, p<0.001). Few patients under observation experienced complications requiring intervention (n=3, 7%) or ICU stays (n=2, 5%). For FabAV-treated patients, 17% experienced complications (n=16) and the majority had an ICU stay (n=54, 56%). Comparing the antivenom administered vs. observation cohorts, there were no statistically significant differences in the proportion of patients who were hemotoxic (χ²(1)=0.91, p=0.34), or in the number of systemic symptoms (χ²(1)=0.78, p=0.38). Progression of venom effects across major joints was significantly associated with FabAV treatment.

Conclusions Hospital policy of administering antivenom in the ICU for adult patients may contribute to the association between ICU stay and antivenom treatment. For those patients with a copperhead snakebite, treatment by observation had favorable patient outcomes, including reduced chance of an ICU stay and reduced overall length of hospital stay.

296 IMPACT ON THE FITNESS OF N95 MASKS WITH EXTENDED USE/LIMITED REUSE, AND HEAT DECONTAMINATION

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10.1136/jim-2021-SRMC.296

Purpose of Study To evaluate the respective and additive impact of extended use/limited reuse, and heat decontamination on the fitness of N95 masks, during the COVID-19 pandemic.

Methods Used Twelve dental staff in a busy practice who recently passed the OSHA mandated fit test to wear the 3MTM 9211 masks participated. Before each 10-hour shift, volunteers obtained a new mask when available and a new mask was obtained if the 10-hour shift is finished and a used mask was collected. High velocity hot air (HVHA) decontamination was done using a CPACSTM RH-N95 unit for a full cycle. Masks were fitted again.

Summary of Results 167 new masks are used. After a 10-hour shift, if the CDC recommended 5 don/doff rule is adopted, the retention rate of N95 masks was 30.5%. If not, the retention rate is 82.6%. 83.3% of masks after limited reuse group, and a new mask obtained if the 10-hour shift is finished and a used mask was collected. High velocity hot air (HVHA) decontamination was done using a CPACSTM RH-N95 unit for a full cycle. Masks were fitted again.
decontamination, the mask fitness of the limited reuse group is significantly reduced (p=0.002), and the mask fitness of the extended use group is not (p = 0.191).

Conclusions Extended use/reuse are reasonable ways to preserve N95 masks in healthcare setting, and it may be safe to extend the count limit of don/doff to beyond 5. The combination of extended use/reuse with heat decontamination significantly

297 IMPROVING DOCUMENTATION IN AN ACADEMIC GENERAL PEDIATRICS CLINIC

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10.1136/jim-2021-SRMC.297

Purpose of Study Well child care (WCC) is a cornerstone of pediatric care. In addition to teaching clinical skills, educators must also teach documentation, billing, and coding as part of resident education. For the Tennessee Medicaid Early and Periodic Screening, Diagnosis and Treatment (EPSDT) program, certain components must be documented in WCC notes. Some of these requirements include important health screenings and portions of the physical exam. We hypothesized that all required components of the EPSDT WCC were not being completed in our resident teaching practice. Our objective was to conduct a quality improvement to improve documentation.

Methods Used Baseline data was collected from December 2019 to May 2020. Twenty charts of children ages 0 to 15 months presenting for WCC were randomly selected and reviewed for completion of selected EPSDT components, including screening for anemia, lead, tuberculosis, and hyperlipidemia risk factors, food insecurity screening, and performance of a complete physical exam. Using the plan, do, study, act method, specific interventions were implemented, including a new note template. Follow up data was reviewed for the next 6 months. The percentage of required components documented was recorded.

Summary of Results Baseline data demonstrated that 45.2% of all measured items were documented in WCC notes. We aimed to improve documentation to 60.2% over the next 6 months. While our first intervention led to an increase in documentation of the EPSDT screening questions, overall documentation decreased to 36.2%, in large part due to dramatic decreases in documentation of food insecurity questions and required physical exam components.

Conclusions While the first intervention led to increased screening for anemia, lead, tuberculosis, and hyperlipidemia risk factors, overall documentation rates decreased. The new note template is a work in progress and further interventions will include methods designed to increase the documentation of food insecurity screening and required physical exam components. Education on documentation requirements is ongoing and other methods are being implemented for improvement. Documentation, billing, and coding are all an important part of resident education.

298 INCORPORATING A POINT OF CARE ULTRASOUND COURSE IN A NEW INTERNAL MEDICINE RESIDENCY PROGRAM

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10.1136/jim-2021-SRMC.298

Purpose of Study The goal of this study is to evaluate the competency of internal medicine residents after a formal course of POCUS during orientation. ACGME requires POCUS training in emergency medicine residents but not for internal medicine residents. This study will be part of an evaluation of whether or not POCUS needs to be taught during orientation in an IM program and what needs to be in the curriculum based on residents’ feedback.

Methods Used This was a prospective cohort study with 7 incoming interns. A pre-course survey determined the residents’ previous exposure to ultrasound. A competency checklist covering the application of ultrasound was used on a student volunteer model prior to the course. The checklist involved heart and lung evaluations in addition to viewing the internal jugular vein and carotid artery. A total of 15 objective written multiple choice questions and 7 ultrasound videos questions were made. The course was broken down into 2 sessions due to the scheduling. It consisted of a didactic session taught by a critical care physician who uses POCUS and then a hands on session of the application of ultrasound with the same physician on a different student volunteer model. The interns were reevaluated 6 weeks after the course using the same written and video assessment and competency checklist on a different student model. A post survey was used to obtain feedback from the residents.

Summary of Results At baseline, the average on the written part was 43% while the video portion was 50%. The average on the application of POCUS was only 12%. 6 weeks after the course, the averages did improve. Although they rarely practiced using the ultrasound on their inpatients, the average of the application of POCUS was 78%. This was a drastic improvement compared to the written and video part. With the written part, the average increased to 61% while the video portion increased to 69%.

Conclusions The interns agreed that the course was helpful but wanted more hands on sessions with the physician. The course was successful due to the increased averages. In order to further determine competency, the interns will be reassessed in 6 months to determine retention of POCUS. Although they didn’t practice much within the 6 weeks, it will be interesting to see what the outcome will be in 6 months.
Comparing Two Facilitator Debriefing Rubrics to Assess Post-Simulation Debriefings

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10.1136/jim-2021-SRMC.299

Purpose of Study The use of simulation-based learning in medical education is essential. Arguably the most critical feature of simulation-based learning is proper debriefing. Many educators have adopted the PEARLS model to guide their debriefing sessions in an effort to facilitate more effective and consistent learning with their students. The aim of this study was to determine if a debriefing rubric could be used to effectively measure facilitator adherence to the PEARLS model by analyzing video recordings of the facilitator’s debriefings.

Methods Used Approximately 130 hours of student debriefings were analyzed. During the video review, researchers evaluated facilitator adherence to the PEARLS debriefing model using two different debriefing rubrics for each video. The debriefing rubrics were the Pearls Debriefing Checklist (PDC) and the Pearls Debriefing Adherence Rubric (PDAR). Inter-rater reliability was established with an interclass correlation coefficient, and the reliability of the results of the two instruments were calculated using Cronbach’s alpha. Pearson’s correlation was calculated as evidence of convergent validity of the two instruments.

Summary of Results The inter-rater reliability for the sum of scores for the PDC, PDAR, and total scores for both tools combined demonstrated an acceptable level of agreement. Measures of internal consistency for the PDAR and PDC were .515 and .714 respectively. A Pearson correlation of .648 was calculated for the convergent validity between sum of the debriefing scores for both tools.

Conclusions Since there was a lack of compelling evidence of both consistency and convergent validity for each of the instruments, this study demonstrates that there is additional work necessary in the evaluation of faculty debriefing behaviors. This study posed a difficult challenge, which was to find a way to operationalize and quantify observed behaviors. The two debriefing adherence rubrics used in this study were based on standardized facilitator behaviors that may not be applicable to all debriefings universally. The best use of the PDAR or PDC in their current iterations would be by simulation program administrators looking to provide formative feedback to novice facilitators in the effort to maximize student learning in the medical setting.

Standardization of Maintenance Intravenous Fluids in Pediatric Inpatients


10.1136/jim-2021-SRMC.300

Purpose of Study To locally implement the 2018 American Academy of Pediatrics (AAP) Clinical Practice Guidelines: Maintenance Intravenous (IV) Fluids in Children to increase proportion of patient hospital days with exclusive isotonic IV fluid use to ≥ 80%.

Methods Used Our academic-affiliated, community-based children’s hospital participated in a national quality improvement project with the AAP Value in Inpatient Pediatrics Network, ‘Standardization of Fluids in Inpatient Settings.’ AAP IRB approval was obtained. Table 1 lists inclusion and exclusion criteria. 15 months of baseline type and duration of IV fluid use at our center was collected by retrospective chart review. A fluid management algorithm, lecture, and electronic medical record (EMR) order set were implemented in September 2019 (cycle 16). Nine months of post-intervention data were collected. Post-intervention isotonic IV fluid use was compared to baseline use via Z-test.

Summary of Results 206 baseline and 170 post-intervention charts were reviewed. Baseline isotonic IV fluid use varied from 47.62% to 100%, and became consistent between 82.14% to 100% following intervention (figure 1). Proportion of exclusive isotonic fluid use in the baseline group was 78% (95% CI 72–83%), compared to 93% (95% CI 89–97%) in the post-intervention group, p < 0.001.

Conclusions This quality improvement project shows that educational and EMR interventions can standardize the use of isotonic fluids in pediatric inpatients in accordance with AAP guidelines.

A Campus Wellness Inventory for Students and Employees


10.1136/jim-2021-SRMC.301

Purpose of Study University wellness programs target health-related goals for staff and students such as physical activity, nutrition, and mental health. Programming improves individual health and wellness as well as improves productivity, campus
morale, staff and student relationships, and decreases absences. To maximize utility of the Louisiana State University Health Sciences Center-New Orleans’ (LSUHSC-NO) current wellness programming, the Wellness Inventory for Students and Employees (WISE) was created. WISE assesses satisfaction and awareness of campus wellness initiatives and garners feedback on how programming can be improved.

Methods Used WISE is a 23-question quantitative survey with qualitative components that targeted current LSUHSC-NO wellness programs: cafeteria, campus gym, on- and off-campus counseling, Tobacco-Free Campus Initiative, and campus lactation rooms. The quantitative aspect employed a 5-point Likert scale of agreement assessing respondent satisfaction and awareness levels. Qualitative data was analyzed to identify common themes in responses for improvement opportunities of campus wellness programming.

Summary of Results 939 of 7,000 (13%) LSUHSC-NO staff and students responded to the WISE. The three highest areas of agreement were: campus-wide tobacco policy awareness (97%), gym equipment availability (87%), and on-campus counseling assistance awareness (83%). The three lowest areas of agreement among participants were: on-campus lactation rooms satisfaction (9%), state tobacco quit-line awareness (18%), and off-campus counseling cost (25%). Qualitative results identified a total of nine areas of strengths and nineteen opportunities for improvement in programming.

Conclusions The high response rate of 13% (compared to previous campus-wide surveys) for the WISE indicates a general interest of campus staff and students to improve wellness programs. Through this assessment, campus wellness staff have been able to highlight programs’ areas of strength and improve areas of weakness. There are also many areas identified from qualitative comments that will need further exploration by the wellness committee and staff. Continued iterations of the WISE will be necessary for LSUHSC-NO to optimize wellness programming for staff and students.

Abstract 302 Table 1 Rate of documentation

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<tr>
<td>Rate of documentation</td>
<td>26.7%</td>
<td>33.9%</td>
<td>35.2%</td>
<td>68%</td>
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Process: Rate of documentation of those that did not document

Summary of Results Rates of FV documentation were higher with nurses compared to residents in both the 2018–2019 and 2019–2020 flu season. After intervention #1, there was a small increase in documentation. A greater increase of documentation was seen after intervention #2. Although we saw improvement in the primary outcome, it is uncertain if those unvaccinated patients received the FV prior to discharge. We can look retrospectively to see if those patients that had been unvaccinated were vaccinated before discharge. Nurse driven protocol for FV administration or building the FV into a discharge order set are future considerations.

Conclusions All children over the age of 6 months should receive the FV. This is the most effective way to protect them from having serious flu-related complications as well as protect our communities. We should ensure that every child who is eligible to receive the FV has the opportunity to do so.

302 FLU VACCINATION RATES OF DOCUMENTATION DURING FLU SEASON

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10.1136/jim-2021-SRMC.302

Purpose of Study Our aim is the increase the rate of influenza vaccination documentation during flu season by residents by 25% in the next 2 months, piloted on the 5th floor unit for general pediatrics patients.

Children under the age of 5 are particularly high risk of serious complications of influenza. Many children that are admitted to the hospital also have chronic conditions including asthma, diabetes or an immunocompromised state. The goal of this project is to assess documentation rates of the flu vaccine (FV) through nursing and medical provider notes. Every patient that is admitted to the hospital should be assessed if they have received the flu vaccination for that flu season. Residents and physicians should be knowledgeable and prepared to educate families especially common misconceptions about flu shots. If the patient has not received flu shot, they should receive flu vaccination prior to discharge.

Methods Used Primary Outcome: Rate of documentation

Secondary Outcome: Flu vaccination rate

Abstract 303 CHILDHOOD OBESITY IN PRIMARY CARE PROJECT – MEMPHIS SITE

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10.1136/jim-2021-SRMC.303

Purpose of Study The ULPS General Pediatrics Clinic was a part of the Childhood Obesity in Primary Care Project (COPC), a quality improvement project intended to improve the implementation of comprehensive obesity-related health risk assessment in pediatric primary care practices. Aims were: 1) Assess obesity risk, including an assessment of growth, 50% of the time for patients < 2 years of age and 85% of the time for patients from 2 - 21 years of age; 2) Assess and counsel on healthy active living (HAL) behaviors 50% of the time for patients from 2 - 21 years of age; and 3) For overweight or obese patients, assess medical risk (through Family History (FH), obesity Review of Systems (ROS), and Physical Exam (PE)) 50% of the time and, when indicated, provide appropriate follow-up through lab orders and work-ups 50% of the time.

Methods Used We conducted retrospective chart reviews (n=120) on Well Child Checks during three time periods in 2018 and 2019. Forty records were reviewed per cycle using a de-identified data collection sheet and then entered into the AAP’s Quality Improvement Data Aggregator, producing clinic reports on grouped data. After each cycle we used the clinic reports to assess how well our clinic performed compared to the aims and to identify areas for improvement. To improve our documentation of obesity-specific FH and ROS, we created a FH form for parents to fill out and updated our electronic ROS.
Summary of Results The percentage of appropriate documentation of FH and ROS increased from 7% to 20% to 41% and 20% to 30% to 67%, respectively. Additionally, appropriate documentation of HAL rose from 43% to 64% to 72% and appropriate PE documentation rose from 20% to 70% to 67%.

Conclusions The results of the ULPS General Pediatric Clinic’s data from participation in the COPC Project led to improvement in gathering obesity specific FH and ROS. Additionally, improvements were made in HAL and PE documentation. As a result of our findings, the clinic designed a new Healthy Weight Visit Note to assist in improving obesity relevant documentation during dedicated weight visits. In addition, our team is developing a new healthy weight curriculum to train residents about obesity management in the primary care setting.

Purpose of Study Assess summer pipeline programs performance in reaching and preparing under represented minority students for science, technology, engineering, mathematics and health careers.

Methods Used Junior STEM Academy (JSA) targets K-3 and Senior STEM Academy grades 4-6. Scholars are immersed in health science while incorporating technology, engineering, and mathematics (STEM-H). Academy uses a combination of effective teaching pedagogies to design a culturally responsive and holistic curriculum, including didactic and hands on learning approaches.

Academy of Pre-Health Scholars (APHS): 5-week program pairs high school students with health care leaders to learn about biomedical sciences, research and public health. It also introduces them to career pathways in health care and helps them prepare for the ACT college entrance exam.

Pre-Medical Summer Scholars (PMSS) prepares undergraduate students interested in medical school for the MCAT entrance exam. The six-week program involves direct instruction, workshops to teach scientific knowledge and application in critical thinking and writing.

Summer Research Internship (SRI): Outstanding undergraduate and select high school URM students engage in in-depth faculty mentored scientific research. Participants present research findings using posters.

Summary of Results In FY 2020, 212 served students (200 Black and 12 Hispanic) from low social economic families, as determined by school lunch eligibility. Mean participation was 150, 25, 20 and 20 for STEM Academy, APHS, PMSS and SRI respectively. JSA and SSA participants reported high self-efficacy and confidence in pursuing Science, Technology, Engineering, Mathematics and Health (STEM-H) programs, better positioning them to pursue careers in health sciences.

98% APHS participants had a 2–4 year college attendance rate and, 100% CPR and First Aid certification. All APHS participants reported increased confidence in pursuing an undergraduate major in STEM-H with increased awareness of careers and educational opportunities beyond medical doctor.

Mean pre-post MCAT change was 5.8. All SRI students complete and present a research project.

Conclusions STEM academy and APHS are effective at supporting URM students. Formative evaluation will identify barriers and facilitators for URM students improved MCAT performance.

Purpose of Study Healthy Heart Community Prevention Project, (HHCPP), a New Orleans community health organization, along with Sustainable Healthy Communities (SHC), LLC, organized an influenza education program during the 2019 and 2020 influenza seasons. The pilot program utilized community health programming in vulnerable New Orleans communities to disseminate culturally and clinically validated cardiovascular disease (CVD) information, emphasize social determinants of health on influenza and CVD, and educate on the benefits of flu vaccination.

Methods Used Zip codes with predominantly African American populations and high prevalence of diabetes and CVD comorbidities were identified via geospatial analysis. Community and faith centers were chosen to bolster community-centered health education, improve participant self-efficacy, and increase accessibility. Two physicians, Keith C. Ferdinand, MD and Bo Nebolisa, MD, hosted health seminars on influenza disparities and distributed non-commercial clinical health materials. Pre and post-seminar surveys assessing education and retention of information were administered. Primary data collected via sign-in sheets, surveys, and participant testimonials were analyzed using SPSS statistics and Microsoft Excel.

Summary of Results Programs were completed at two community centers, five faith centers, two senior homes, and a local community hospital during both seasons. Data analysis demonstrated increased participant ability to identify multiple barriers to and health benefits of influenza vaccination. Moreover, increased engagement was noted when seminars were coupled with health materials and incentives.

Conclusions The HHCPP demonstrated positive impact of utilizing community partners and local minority health advocates in trust building, action, and accountability towards reducing longstanding health disparities. Limitations include: COVID-19 pandemic restricted program completion during the 2019 season and participant hesitation to divulge personal residence zip codes. Future program directions include zip code-driven diabetes risk reduction, health belief model workshops to overcome belief barriers, and faith and community leader involvement to support influenza education initiatives.
Purpose of Study Participation in sports is popular among children and a common cause of pediatric injury. Understanding the epidemiology and trends of sports-related injuries is an important component of injury prevention efforts.

Methods Used A retrospective review of sports injuries presenting over one year (2019) to an Emergency Department (ED) of a large academic Children’s Hospital was performed. Inclusion criteria focused on patients ≤ 18 years whose ED visit resulted from active participation in a sport. Cases were identified using ICD-10 codes. Demographic data was collected on these patients and included gender, age, race, injury specifics. Descriptive statistics were performed and categorical variables were analyzed using chi-square test.

Summary of Results A total of 1333 sports injuries were identified with the most common being football (43%); basketball (36%); soccer (11%); baseball (8%). The median age was 13 years (IQR: 4 years), 428 (32%) < 12 years and 905 (68%) ≥ 12 years; 1143 (86%) were males and 835 (63%) were black. School was the most common location for sports injuries (28%). When comparing injuries by age groups (<12 vs. ≥12), baseball and football injuries were more common in those <12 years (14% vs 6.6% and 53% vs. 38% respectively) whereas basketball and soccer injuries were more common in those ≥12 years (43% vs 22% and 11% vs 9% respectively); p<0.001. When comparing injuries by gender, baseball and football injuries were more common in males (9% vs. 2% and 49% vs. 6% respectively) whereas basketball and soccer injuries were more common in females (59% vs 32% and 27% vs 8% respectively); p<0.001.

Conclusions Sports injuries that are commonly encountered in the emergency department differ in age and gender. Basketball and soccer injuries were more likely to be encountered in older females, while baseball and football injuries were more likely seen in younger males. This information can help guide future preventative efforts provided by primary physicians, schools, and coaches.

Purpose of Study INJURIES

10.1136/jim-2021-SRMC.307

RECREATIONAL MOBILITY VEHICLES AND PEDIATRIC INJURIES

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Purpose of Study Injuries are the number one cause of death in children and cause significant morbidity. Common scenarios for injury include vehicles that allow children to be mobile and independent (example ATV - all terrain vehicles, dirt bikes, bicycles, skateboards, and scooters). We present a case series review of these external causes of injury.

Methods Used Following IRB approval, the electronic medical record was queried to identify all patients with an injury related to a recreational vehicle during a one year period (2019). Demographics with injury specific (body part injured, site where injury occurred, mechanism) and helmet usage were collected and analyzed using Excel. Patterns of injury and ages at risk are highlighted.

Summary of Results A total of 246 patients were identified (104 bicycle, 74 ATV, 25 dirt bike, 14 motorcycle, 16 scooter and 14 skateboard). Ages ranged from 2 y to 18 years with the greatest range noted for bicycles (2 to 17 years) and ATVs (2 to 16 years). The mean age was higher for motorcycle and skateboard (13 and 11.6 respectively) and lowest for bicycle (9). Many of the injuries were to passengers (most of which are not designed to carry passengers). The majority of (overall study (97%) and for each mode of transportation) patients were Caucasian which is in contrast to our overall ED population, (42% Caucasian). The majority were male (n=181 (74%)). 140 of the 246 (57%) were not wearing a helmet (60% of ATV riders and 5 patients who reported their helmet came off). The lowest percentage of riders reporting appropriate helmet use was skateboarders with only 14% wearing helmets, and the highest percentage was dirt bike riders with 80% reporting helmet use.

Conclusions Common scenarios for injury include vehicles that allow children to be mobile and independent. Most of these injuries were found in Caucasian males between the ages of 9–12 with low rates of helmet use. It is no surprise that the study found many pediatric patients to be injured on these vehicles because most are not designed to carry passengers.

RESIDENT MORBIDITY AND MORTALITY CONFERENCE

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Purpose of Study Medical errors are increasingly recognized as a significant cause of patient morbidity and mortality (M&M). Given the potential for systems-based improvements through discussion of patient safety events (PSE), a need was identified for a formal M&M conference system within the UAB/CoA Pediatric Residency Program in order to help promote resident involvement in these processes. From 7/1/2020 – 7/1/2021 we aim to decrease the number of patient safety events at CoA by 20% compared to the preceding 12 month period (7/1/2019 – 7/1/2020). Given there were 18 PSE from 7/1/2019 – 7/1/2020, our aim is less than 14.

Methods Used Each quarter, an hour-long case presentation is completed during residency noon-conference. During this time, a safety event is reviewed, utilizing standard SBAR format (situation, background, assessment, recommendation). Patient history and preceding information is discussed, followed by completion of an analysis of contributing factors and literature review. Resident leaders will then identify potential interventions to pursue (i.e. policy changes, areas...
for improved communication, mock codes, etc.). We will analyze the number of PSEs distributed quarterly to determine the effectiveness of the M&M model as a quality improvement initiative.

Summary of Results There has been one quarterly M&M conference since 7/1/2020. The number of PSE for Q3 of 2020 has not been released. There were 18 PSE between 7/1/2019 – 7/1/2020. Over the past 6 months, there has been a 50% reduction in PSE in comparison to the preceding 6 months.

Conclusions We are encouraged by the data from last year and hope through thoughtful M&M conferences we can continue to engage residents in identifying problems and improving systems.

309 ERYTHRODERMIC PSORIASIS: FATAL PSORIASIS AND URGENT RECOGNITION
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10.1136/jim-2021-SRMC.309

Case Report Psoriasis a chronic inflammatory condition of the skin that occurs in around 2–3% of the population. Erythrodermic psoriasis (EP) is an extremely rare variant been the clinical hallmark a generalized erythema of the skin involving 75% of body surface area. Despite the availability of multiple therapies, mortality rates still range from 9–64%. Therefore, prompt recognition of this life-threatening condition is crucial to ensure early therapy and disease control. We present an uncommon case of EP manifesting in a Hispanic patient, which has been rarely described in the literature.

73 yo male with a history of HTN, Psoriasis, and alcoholism presented with the complaint of severe skin tenderness and eruptions of two weeks of progression until it started compromising body movements and oral intake. He stated he had been following a poor diet and consuming excessive alcohol for three weeks before visiting the hospital. Physical examination evident for severe desquamative skin, hard plaques, erythrodermic thick scales, and skin exfoliation, involving 80% of the body surface area. Lesions spare mucosa but present in the rest of his body, palms, soles, and genitalia. Laboratory show elevated creatinine and low bicarbonate, suggestive of severe dehydration. Also, present fever, tachycardia, and minimal body motion with exquisite pain. Biopsy with pathological findings suggestive of a psoriatic form of dermatitis. Immediately managed with IV Fluids, Antibiotics, and topical triamcinolone. However, 48 hours after admission patient developed septic shock, resulting in fatality.

Erythrodermic Psoriasis critical situation is the severe capillary leak that develops due to loss of skin integrity with progressive edema, hypotension, superimpose infections, and subsequently high risk of fatality. There may risk factors that can provoke this psoriasis exacerbation including infections smokers, alcohol abusers among others. Sudden development of this skin inflammatory exacerbation requires an emergent diagnosis due to a high risk of systematic compromise that can succumb to multiorgan failure and severe cardiovascular compromise. This case illustrates the possibility of the 3% of psoriasis that can develop life-threatening situations and need urgent recognition in order to provide immediate therapy and avoid undesired outcomes.

310 THE PREVALENCE OF LOW BACK PAIN AND EVALUATION OF PREVENTION STRATEGIES AMONG THE ELECTROPHYSIOLOGY AND CATHETERIZATION LABORATORY COMMUNITY (PHYSICIANS, NURSES, TECHNICIANS) IN RURAL HOSPITALS
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10.1136/jim-2021-SRMC.310

Purpose of Study The objective of this study was to determine the prevalence of low back pain in rural community EP and Cath laboratories and the significance of exercise and physical activity routines, health education, and continued management support as low back pain prevention strategies in the EP/Cath lab community.

Methods Used A cross-sectional survey was conducted utilizing 30 employees working in the EP/Cath lab from two rural hospitals. Informed consent was obtained. Investigators were blinded to identity of samples as the surveys were filled anonymously.

Summary of Results
1. The largest group of subjects reports low back pain in L4–S1 area.
2. This study showed a higher overall pervasiveness of low back pain but less low back pain symptoms on the short-term basis.
3. The data showed an increase in the prevalence of low back pain once five years of service in an EP/Cath lab setting has been completed.

Conclusions The primary goal of this study was to illustrate the prevalence and generalized characteristics of back pain among EP and Cath laboratories in rural hospital settings. Conclusions that may be drawn from this study are: the prevalence of low back pain demonstrated within this study were consistent when compared to available studies, low back pain is a common condition among EP and Cath lab employees, and several low cost/lack risk preventative strategies for reducing musculoskeletal symptoms in the workforce are not currently being completed by those who participated in the study.

311 CANNABIS-RELATED EMERGENCY DEPARTMENT VISITS IN CALIFORNIA SINCE ITS LEGALIZATION IN 2018
12N Shivaprakash*, 2T Modi, 3G Green, 1California University of Science and Medicine, Colton, CA; 2Riverside University Health System, Riverside, CA; 3Texas Tech University Health Sciences Center, Lubbock, TX
10.1136/jim-2021-SRMC.311

Purpose of Study Colorado was the first state to legalize and implement recreational cannabis in 2014. Since 2014, research has suggested an increase in patients with cannabis-related primary diagnoses in emergency departments (ED). California joined the list of states legalizing recreational cannabis in 2018 and we aim to explore its implications by looking at cannabis-related ED visits in California, before, during, and after the years of cannabis legalization.

Methods Used To assess our hypothesis, we are conducting a cross-sectional, observational study using cannabis-related diagnoses data from the Colorado Hospital Association (CHA) and California Health and Human Services (CHHHS) Hospital ED open datasets. A simple linear regression was done in
order to assess any trend cannabis-related ED diagnoses might have had over time. In order to further understand cannabis-related ED diagnoses over time and the factors that might impact this, we constructed a binomial logistic regression model. This model was built using Colorado as a framework and aid in inferring, comparing, and interpreting trends in California.

Summary of Results A strong, positive linear relationship of cannabis-related ED visits over time was observed in both Colorado from 2011–2017 (R=0.93) and California from 2014–2018 (R=0.99). Our model yielded two significant predictor variables in both states, (1) year(2013) in Colorado and year(2017) in California, and (2) the ‘new’ concept of the legalization of recreational cannabis. This indicates that although the number of cannabis-related ED diagnoses is increasing over time, the anticipation of, the actual legalization of, and the novelty of cannabis plays a role.

Conclusions We investigated the impact cannabis legalization had on cannabis-related ED primary diagnoses over time in Colorado and California. Our analyses provide a better understanding of the factors that may contribute to this trend and draw connections to public health implications previous literature has established. Our model can be used to predict the impact that the legalization of cannabis may have on emergency departments and, perhaps, begin the discussion on changes or adjustments that need to be made accordingly.

Purpose of Study Cannabis legalization coincides with a decrease in the perceived harmfulness and can lead to increased improper use. Thus, there is a need for insight into the short and long-term mental and physical health impacts of cannabis. The largest increases were seen in persons who also had diagnoses of schizophrenia and other psychotic disorders, suicide or intentional self harm, and mood disorders. In 2018, the highest number of cannabis consumers in the United States were located in the state of California, amounting to approximately 5.9 million. In 2018, California also joined the growing list of states legalizing recreational cannabis. Therefore, there is a need to establish protocol and examine the patterns of patients receiving cannabis use, abuse, and dependence with psychotic or anxiety disorder diagnoses in California emergency departments to better help these patients and provide improved mental healthcare to this rising patient population.

Methods Used In order to assess our aim and hypothesis, we collected cannabis with psychotic or anxiety disorder diagnosis data using ICD-10 codes from 2015 through 2018 from the California Health and Human Services (CHHS) Hospital ED open datasets. A simple linear regression was done in order to observe any trend cannabis with psychotic or anxiety disorder diagnoses assess might have had over time.

Summary of Results According to our simple linear regression, cannabis with psychotic or anxiety disorder diagnoses in the ED has continued to increase over time (2015–2018) with a strong, uphill linear relationship (R= 0.87).

Conclusions There are many complications related to cannabis use with acute mental illness, cannabis toxicity, cannabinoid hyperemesis syndrome, and cardiovascular complications. With the increase in cannabis use with psychotic or anxiety disorder ED diagnoses, it would be socially and economically beneficial to develop therapies to reduce the time spent in emergency departments and the number of hospitalizations due to improper use. This research highlights the increase in psychiatric diagnoses associated with cannabis-related ED visits, especially in states where recreational cannabis is legalized, and the significant need for data collection regarding cannabis dosing, side effects, and treatment protocol.
314 STANDARDIZATION OF FLUIDS IN INPATIENT SETTINGS

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10.1136/jim-2021-SRMC.314

Purpose of Study The purpose of this study was to describe and standardize the use and monitoring of intravenous fluids in inpatient pediatric settings across the United States. Our specific aim was to increase the proportion of hospital days with exclusive isotonic maintenance IV fluid use by 80% by May 2020. Secondary aims included decreasing the number of WBC draws (a proxy for routine labs) per hospital days by 20% and decreasing the proportion of time, in hours, spent on maintenance IV fluids by 10%.

Methods Used Baseline data was collected over months of chart review. Then data was collected on a month to month basis while implementing various interventions in the hopes of achieving our aims. Interventions included a brief educational lecture during didactic time for the resident physicians to increase their awareness of the project and our goals. As well as the creation of a poster that was posted around the hospital to inform physicians and nurses of inclusion and exclusion criteria for the study and the goals of the study.

Summary of Results Site specific data show we were able to achieve our aims. Interventions included a brief educational lecture during didactic time for the resident physicians to increase their awareness of the project and our goals. As well as the creation of a poster that was posted around the hospital to inform physicians and nurses of inclusion and exclusion criteria for the study and the goals of the study.

315 PREDICTIVE FACTORS OF FOLLOW-THROUGH IN EARLY LIFESTYLE INTERVENTION FOR CHILDHOOD OBESITY

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10.1136/jim-2021-SRMC.315

Purpose of Study This study explored predictive factors of patient follow-through to appointments at a single, longitudinal subspecialty Pediatric Obesity clinic.

Methods Used A retrospective chart review of 121 pediatric patients with referrals made between January 2010 and March 2018 was conducted. Patients were grouped into three categories based on follow-through status: immediate (attended first appointment made at time of referral), late (missed first appointment but eventually attended), and never attended an appointment. Demographic, medical, and social data were extracted from patient medical records, including comorbid conditions such as musculoskeletal pain and past medical interventions such as obesity counseling. Reported comorbidities and conditions in family medical histories were documented by organ system. Associations between clinical and family factors and follow-through status were evaluated using the χ² test, Fisher’s exact test, and Median test in SPSS.

Summary of Results The majority of patients were Hispanic (n=73, 60.3%) and male (n=65, 53.7%), with an average age of 7.81 ± 3.82 years. Musculoskeletal pain was the only comorbidity to differ significantly among groups, and 31% of patients with timely follow-through experienced musculoskeletal pain compared to 3% of those with no follow-through and late follow-through (p<0.001). Likewise, age was the only other patient factor to be associated with follow-through.

Conclusions Documenting childhood obesity counseling more frequently prior to a specialty clinic referral may improve patients’ follow-through rates. Musculoskeletal pain was significantly associated with visit attendance. This suggests that most comorbid conditions associated with childhood obesity have limited effect on motivating parent/patient behavior to seek longitudinal intervention.

316 SEX-STRATIFIED, AGE-RELATED PATTERNS IN BLOOD PRESSURE ACROSS 30 YEARS

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10.1136/jim-2021-SRMC.316

Purpose of Study We sought to determine whether age-related patterns in blood pressure (BP) have changed over the past 3 decades and whether these age-related BP patterns persist in those without metabolic abnormalities.

Methods Used We included 11,797 adults (≥20 years) from the 2011–2018 National Health and Nutrition Examination Survey (NHANES) and 11,274 adults from NHANES-III (1988–1994) with ≥3 BP readings. Those taking antihypertensives or with a history of cardiovascular disease were excluded. Age was categorized into 12 five-year age spans. We plotted confounder adjusted mean systolic BP, diastolic BP, and pulse pressure (PP) for each age group. A ‘healthy cohort’ included those who did not meet any non-BP metabolic syndrome criteria and did not have liver or kidney dysfunction. All analyses accounted for the complex survey design.

Summary of Results Adjusted SBP, DBP, and PP patterns across 5-year age groups were similar between 1988–1994 and 2011–2018 NHANES cohorts (figure 1; p<0.001). Among healthy individuals, we observed no significant differences between cohorts (p<0.001); healthy individuals displayed similar BP patterns, despite having a significantly lower BP range.

Conclusions Age-related BP patterns in U.S. cohorts 30-years apart as well as in a subset of healthy individuals were largely...
similar, suggesting that age-related BP patterns may be physiological rather than pathological.

Abstract 316 Figure 1  Sex-stratified adjusted mean SBP, DBP, and PP by age. Top: 1988-1994 NHANES-III. Bottom: 2011-2018 NHANES.

Purpose of Study Motor vehicle crash (MVC) injuries are the number one cause of death for children. Appropriate child passenger safety (CPS) equipment has been shown to prevent serious injury and death. The CDC estimates $196 million dollars cost of MVC deaths in pediatrics annually for our state. We sought to evaluate the feasibility and cost of utilizing the pediatric emergency department as a site for providing child passenger safety equipment to families.

Methods Used Descriptive study of a program initiated in an urban tertiary care emergency department within a free standing Children’s Hospital was performed. Families were eligible for a car seat or a booster seat if their child was in the emergency department following a MVC and they had no CPS available. Logs were kept regarding numbers of each device provided for a three year period. Costs were tracked for three years of program.

Summary of Results A total of 791 child passenger seats were given to families in the three year study period with 264 seats given in 2017, 240 seats in 2018 and 287 seats in 2019. The majority of seats provided were Toddler/convertible car seats (n=530) with 174 infant car seats and 77 boosters and 10 special needs car seats. Cost for CPS were provided by a local law firm donor and total cost for these three years was $49,607.

Conclusions The emergency department is a practical site for provision of safety equipment to families attending. Prevention saves money and helps keep children safe.

Hematology and oncology
Joint plenary poster session
4:30 PM
Thursday, February 25, 2021

Abstract 318 Figure 1

Case Report A 68-year-old female with history of Type 2 Diabetes presented with fatigue, left upper abdominal pain, 20 Lb weight loss, and easy bruising for 1 month. She was noted to have a platelet count of 20,000 and abdominal imaging showed severe splenomegaly with infarctions. An infectious and rheumatological workup was negative. A bone marrow aspiration and biopsy showed blastic plasmacytoid dendritic cell neoplasm (BPDCN) involving 50% of the bone marrow. Next-Generation Sequencing testing showed mutations involving TET2, ASXL1, KRAS, SETBP1, and U2AF1. She underwent splenectomy and pathology showed severe splenomegaly with a weight of 1800 g with necrosis, extramedullary hematopoiesis, and atypical cellular infiltrate consistent with hematopoietic neoplasm. Due to the delay in obtaining targeted therapy of Elzonris (Tagraxofusp) and her continued clinical deterioration, she was started on R-CHOP chemotherapy. She
underwent a lumbar puncture, CSF cytospin showed many large atypical plasmablastic cells. She was started on twice-weekly intrathecal Methotrexate. She received a total of 3 cycles of R-CHOP. In between cycles, patient suffered from several complications including febrile neutropenia and left pleural effusion which was drained- fluid studies were consistent with plasmacytoid cells. After the third cycle of R-CHOP, she developed an intra-abdominal abscess which required emergent drainage and cultures grew Vancomycin-resistant enterococcus. Unfortunately, her condition deteriorated rapidly with worsening lactic acidosis and multi-organ failure. Goals of care were discussed with her family and she was palliatively extubated.

**319 SYNCHRONOUS INVASIVE DUCTAL CARCINOMA OF THE BREAST AND CLEAR CELL RENAL CELL CARCINOMA WITH A RARE PRESENTATION AND BEHAVIOUR**

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**Introduction** The presence of two or more primary tumors is a relatively uncommon phenomenon. This case presents a rare case of synchronous breast and renal cell carcinoma (RCC) with unusual features, including RCC metastasis to the duodenum and stomach, rapid recurrence of the tumor at the nephrectomy site, rapid RCC growth rate, and the rare presence of syncytial-type giant cells in the RCC.

**Case presentation** A 64-year-old female with left breast invasive ductal carcinoma which was locally advanced. Her PET scan showed a right kidney mass, which was found to be a low-grade clear cell renal carcinoma; however, the presence of scattered areas with syncytial-type giant cells raised the grade to 3/3 according to the WHO grading system. The patient underwent nephrectomy only for the RCC and adjuvant chemotherapy with surgical resection for her IDC. She shortly presented with an obstructive mass in the duodenum; thereupon, she underwent gastro-jejunostomy with choledojejunos-tomy. The diagnosis of TMA in Sickle cell patient with aggressive behavior? Further studies, including genetic and molecular profile analysis, may help understand synchronous tumors’ nature and clinical behavior and provide more effective treatment modalities.

**320 THROMBOTIC MICROangiopathy IN SICKLE CELL DISEASE: AN ENTITY NOT TO BE MISSED**

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10.1136/jim-2021-SRMC.320

**Introduction** Microangiopathic Hemolytic Anemia and thrombocytopenia, which are the characteristic of thrombotic microangiopathy (TMA), is a rare clinical and laboratory picture associated with Sickle cell hemoglobinopathies who present with end-organ dysfunction.

**Case presentation** We present the case of a 28-year-old patient with sickle cell disease, that is well-controlled and usually has her pain crisis once yearly presented for the first time to our hospital for pain crisis. The next day, she was found to have a significant drop in hemoglobin and platelets along with fever and decreased level of consciousness. The workup showed moderate schistocytes on peripheral blood smear with no sickle cells with a reticulocyte count of 20%, ADAMTS-13 antibody was taken, and it was 14.3 U/ml which is considered to be borderline. She was diagnosed with thrombotic microangiopathy, TTP. The patient received steroid and therapeutic plasma exchange (TPE). After 5 plasmapheresis sessions, she achieved complete clinical recovery.

**Discussion** While the pathogenesis of veno-occlusive crisis in sickle cell is mainly attributed to the monocytes, neutrophils, through TNF-α and IL-1 beta, which activates the NF-KB pathway in endothelial cells leading to increased expression of ICAM1 and VCAM1, thus causing adherence of the mononuclear leukocytes to endothelial cells, then the P & E selectins located on endothelial cells, leads to interaction between neutrophil and red cells, which stimulates vaso-occlusion. On the other hand, TMA’s pathophysiology in sickle cells is not yet well understood, especially with cases’ rarity. The main hypothesis is that endothelial injury caused by sickle cells releases VWF multimers, which become coated with the hemoglobin released during hemolysis, thereby preventing their degradation by the ADAMST13 enzyme, thus leading with platelets and fibrin to the formation of small thrombi in the microvasculature. The diagnosis of TMA in Sickle cell patient is an infrequent entity which proposes a tremendous diagnostic challenge to hematologist due to the overlapping of symptoms with sickle cell veno-occlusive crisis end-organ damage, so the clinician should keep a high index of clinical suspicion.

**321 CATAstroPhIC ANTPhosphOLipid SYNDrome ASSOCIATED WITH MITRAL VALVE THROMBOSIS**

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10.1136/jim-2021-SRMC.321

**Introduction** Catastrophic antiphospholipid syndrome (APS) is a rare but potentially life-threatening autoimmune condition that complicates 1% of patients with Antiphospholipid syndrome and results in rapid multiple organ failures.

**Case presentation** A 32-year-old female patient, G1P0A0, has systemic lupus presented at 36 weeks of gestation with fatigue...
and purpuric lesions on her palms. Laboratory workup showed thrombocytopenia, a prolonged A-PTT, and a low C3 and C4; however, they were the same as her baseline. Both ANA and dsDNA were negative. The patient got admitted to the hospital and was started on solumedrol as a case of Lupus flare; however, her condition deteriorated. She developed sudden onset dyspnea with decreased consciousness level. Her X-ray showed pulmonary edema, and echocardiography showed mitral valve thrombosis with brain MRI showing multiple small foci in the right parietal and temporal suggesting subacute ischemic lesions. Laboratory workup showed more drop in the platelet count, a creatinine of 4 mg/dl, proteinuria with positive anti-cardiolipin antibodies, and anti-ß2 glycoprotein 1.

The patient was diagnosed with Catastrophic (APS). Delivery of three or more organs/tissues, development of manifestations in less than a week, histological evidence of intravascular thrombosis, and presence of antiphospholipid antibodies on two occasions six weeks apart. Our patient had four criteria. The pathogenesis of Catastrophic (APS) is not well understood, but it revolves around four main connected mechanisms: cellular activation, inhibition of anticoagulants, inhibition of fibrinolysis, complement activation. This what makes a multidisciplinary approach with the combination of all treatment modalities, including anticoagulation, pulse steroid, IVIG, and plasmapheresis needed for treatment.

Discussion The diagnosis of Catastrophic (APS) is established based on the following diagnostic criteria: involvement of three or more organs/tissues, development of manifestations in less than a week, histological evidence of intravascular thrombosis, and presence of antiphospholipid antibodies on two occasions six weeks apart. Our patient had four criteria. The pathogenesis of Catastrophic (APS) is not well understood, but it revolves around four main connected mechanisms: cellular activation, inhibition of anticoagulants, inhibition of fibrinolysis, complement activation. This what makes a multidisciplinary approach with the combination of all treatment modalities, including anticoagulation, pulse steroid, IVIG, and plasmapheresis needed for treatment.

Case Report The extramedullary manifestation of Acute myeloid leukemia (AML) is known as chloroma, and it is a rare malignant tumor. Primary chloroma can rarely occur without a known pre-existing diagnosis of acute leukemia. It tends to involve the central nervous system, bones, soft tissues of the head and neck, skin, gastrointestinal tract, with small bowel involvement being more common than large bowel involvement.

Case presentation We present a case of a 62-year-old male patient presented with a four-day history of a rash that appeared on his upper trunk/back, arms, hands, and face appeared simultaneously with a normal CBC. It was considered as a drug rash, and the patient was prescribed antihistamine. After he failed to improve in one week, he was referred to a dermatologist. A skin biopsy was taken and showed leukemia cutis. A repeat of his CBC showed a WBC of 50,000/mm3 and a platelet count of 40,000/mm3. A bone marrow biopsy was taken and showed AML. PET scan showed skin and small bowel involvement. He was started on induction chemo with Idarubicin and cytarabine, after which he developed febrile neutropenia 7 days post-induction. The patient had peritoneal signs and was continuously vomiting.

His condition deteriorated, and he was transferred to ICU. He was found to have small bowel obstruction (SBO). A nasogastric tube was inserted for decompression. He was managed conservatively because he was hemodynamically unstable and not fit for surgery.

Discussion Our case is considered to be a rare one because AML very rarely presents with chloroma in addition to the GI manifestation, which usually occurs in the advanced stage of hematological malignancies or as a complication of chemotherapy. The gastrointestinal tract involvement by myeloid sarcoma is a very rare, yet life-threatening entity that should not be missed. It can present in multiple ways like abdominal pain, bleeding, perforation, SBO like our case, intussusception, liver infarction, portal hypertension, appendicitis, bile duct obstruction, or pancreatitis, and they require urgent medical attention to save the patients’ life. The prognosis is usually poor.

Case Report TTP is a multi-system microvascular disorder that may be caused by an imbalance between unusually large von Willebrand factor multi-dimer and a cleavage protease ADAMTS 13. It is characterized by thrombus deposition in different organs. TTP is either an idiopathic or acquired condition caused by collagen disorder, malignancy, or hematopoietic stem cell transplantation. We report a rare case of pancreatitis-induced TTP.

Case An Alcoholic 77-year-old gentleman with dyslipidemia, hypertension, diabetes, and vitamin B12 deficiency presented with worsening acute epigastric pain for 1 week and pancreatic enlargement on CT. In absence of biliary obstruction, circrhosis, and hypertriglyceridemia; alcohol was presumed to be the etiology. Along with periumbilical pain, lipase was 1511 IU/L, and amylase was 19,000 IU/L. Leukocytes were normal and hemoglobin was 15 g/dL. However, platelets were 20K/µL, with a normal MPV. Two months earlier, platelets were 175K/µL. On day2, the platelets dropped to 7K/µL. The Platelet antibody test was negative and the initial blood smear did not show any schistocytes, the patient received platelets. On day 3 hemoglobin dropped to 10 g/dL with normal MCV and RDW, while platelets continued to drop. Reticulocyte count was normal but haptoglobin was very low suggesting hemolysis. Bone marrow biopsy and immunophenotypic tests were normal. The patient developed slurred speech and weakness on the right side of the body with a positive CT finding of ischemia, a repeat blood smear showed schistocytes confirming the diagnosis of TTP, although the ADAMTS13 enzyme resulted as normal. Plasmapheresis and rituximab were associated with improved platelet count and anemia.

TTP is clinically characterized by 5 typical findings: Hemolytic anemia, thrombocytopenia, renal impairment, fever, neurological disorder. However, not a single one of them is diagnostic for TTP.

Clinicians should be aware that acute pancreatitis can be associated with TTP. The mechanism remains unclear but cases of TTP do not always involve an antibody-mediated inhibitor of ADAMTS 13.
ACRAL METASTASIS: AN UNCOMMON SITE FOR CANCER SPREAD

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Case Report Case report of acral metastasis

Methods Used Review of Electronic Health Records and literature review

Results A 70-year-old female presented with pain and swelling of the distal left thumb. She had a history of metastatic breast carcinoma (MBC) with neuroendocrine features diagnosed and treated 5 years prior. She was found to have lung metastasis but declined therapy. Five months later she presented with the aforementioned thumb symptoms. Plain films of the hand showed an erosive soft tissue mass on the first distal phalanx with differential diagnosis of metastatic cancer, primary bone tumor, or infection. She was unsuccessfully treated with antibiotics. She received palliative radiation to the thumb and started systemic chemotherapy with liposomal doxorubicin. Six weeks later patient reports significant improvement in pain and swelling of the distal thumb.

Bone metastases are common with many cancers, but metastases to the hands and feet (acrometastases) are rare, comprising around 0.1% of all metastases. They are often the presenting sign of underlying malignancy. The distal phalanx of the third and first digits are the most affected sites. The reason for the scarcity of distal metastasis is incompletely understood, but is likely due to undesirable microenvironmental factors in the acral skeleton such as brisk venous blood flow and paucity of red marrow. The low incidence of acrometastasis can create a significant diagnostic dilemma; low suspicion can lead to the presumption of infection or benign bone pathology rather than malignancy, delaying diagnosis and initiation of treatment. Once identified, management is generally any combination of radiotherapy, excision, and amputation. Prognosis is multifactorial, but median survival is only 6–8 months from time of diagnosis, likely in part due to a high rate of initial misdiagnosis.

Conclusion This case highlights the scarcity of distal metastases as presenting signs of primary tumors and provides an impetus to clinicians to consider malignancy in a patient with any such distal lesion. Increased awareness of such presentations can afford earlier diagnosis and prompt treatment with the hopes of improving outcomes in patients presenting with such unique findings.

IMPACT OF RESTRICTIVE DIETS ON CANCER: CASE REPORT ON A PATIENT WITH SQUAMOUS CELL CARCINOMA (SCC) OF BASE OF TONGUE (BOT) ON A KETOGENIC DIET

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Introduction ‘We are what we eat’ is probably more relevant now than when it was said centuries ago by Hippocrates. Calories Restriction (CR), Intermittent fasting (IF), ketogenic diet (KD), CR mimetics have shown to enhance the efficacy of traditional anti-cancer therapies and reduce side effects of cytotoxic treatments. Here we present a case report on a patient diagnosed with head and neck cancer and how a ketogenic diet affected his overall survival.

Case presentation A 72-year-old Caucasian male was initially diagnosed with HPV+ Stage III (T2N1M0) keratinizing squamous cell carcinoma (SCC) of the base of tongue (BOT) in 9/2015. At that time, he declined surgery/chemoradiation and decided to pursue a holistic approach by following a strict keto diet. He presented again in 10/2019 due to worsening pain in his neck and was restaged as 4A (T3, N2, M0). He was offered definitive/curative treatment with concurrent chemo – radiation (RT). Patient was very hesitant to treatment and eventually was agreeable to palliative dose of RT. After 3 RT sessions, he quit treatment due to pain during his RT sessions and enrolled himself in home hospice. Due to continued pain even while on hospice patient is now agreeable to treatment options if offered. Repeat PET CT 9/2020 showed increase in size of tumor, but he is still staged as 4A (T3, N2, M0) based on the scan. He has now decided to pursue radiation treatments.

Discussion Cancer cells are vulnerable to nutrient deprivation and lack the ability to adapt to alternate sources of nutrition like normal cells. Patients with SCC and advanced neck disease usually have a poor prognosis. Our patient had no evidence of distant metastasis even after 5 years of diagnosis despite receiving no medical intervention for his disease. We suspect ketogenic diet helped slow down progression of disease in his case. However, there are also some risks to these restrictive diets especially in patients who are already cachexic, diabetic, immunocompromised or after recent surgery where it can impact wound healing. These diets if attempted need to be done under constant supervision of a dietician and medical oncologist.

LEMIERRE’S SYNDROME: AN EVOLVING DISEASE

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Introduction Lemierre’s Syndrome (LS) is defined as thrombophlebitis of the internal jugular vein with resulting systemic septic emboli, most commonly in the lungs. Most cases occur following an oropharyngeal infection and have been historically caused by the bacterial pathogen Fusobacterium necrophorum. However, infection from other pathogens is becoming more common in recent years. We present a case of LS presenting as a post-influenza methicillin-sensitive staphylococcus aureus (MSSA).

Case Report A 23-month-old male was brought to the Emergency Department (ED) with complaints of left neck swelling and recurrent fevers of one week duration following resolution of an influenza A infection. Physical exam was positive for an ill-appearing child with swelling and induration of the left neck extending from the posterior aspect of the neck to the left cheek with differential warmth and erythema. Vital signs were significant for a temperature of 103.6 degrees F, heart rate 177 bpm, and respirations 44 breaths/minute. Laboratory results revealed CRP 12.6, ESR 90, LDH 419, lactate 3.44, and WBCs 11.35. Computed tomography (CT) scan of the neck showed myositis, cellulitis and fasciitis on the left with a collection of loculated fluid suggestive of an
intraparotid abscess with poor visualization of the internal jugular vein (IJV). Additionally, bilateral pulmonary nodules were found on CT scan of the chest. Blood cultures were positive for methicillin-sensitive Staphylococcus aureus (MSSA). Due to high clinical suspicion of Lemierre’s syndrome, a doppler ultrasound was obtained which demonstrated a left IJV thrombus. CT scan of the neck was repeated post-incision and drainage which demonstrated left IJV thrombus and multiple bilateral pulmonary nodules that were considered to be septic emboli. He was treated with antibiotics and a six-week course of anticoagulation with resolution of his thrombus.

**Conclusion** Though historically caused by Fusobacterium necrophorum, other organisms such as MSSA are rare causes of LS and are increasingly being recognized as important causative organisms. LS can present as a complication of influenza and a high index of suspicion is required. The role of anticoagulation remains unclear.

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**Case Report** A 54yo male was evaluated in office for a painful pedunculated 5.5 × 5.0 × 3.5 cm blue and black mass on the superior gluteal cleft, which had persisted for four years with minimal regression on antibiotic therapy. The mass was firm and mobile on palpation with blue and black mottling of overlying skin. The past history was significant for 20+ bone fracture repairs related to sports injuries and a mole removal at the site of the lesion, 20 years prior to the lesion’s onset. The lesion was removed with an elliptical incision and moderate bleeding was observed. An attempt was made to excise the lesion within its capsule, but the mass proved to be much larger and deeper than expected. The mass appeared ragged and red with diffuse extension into deep subcutaneous adipose tissue. Microscopic examination revealed proliferation of spindled to epithelioid appearing cells. Extensive hemosiderin deposition, numerous siderophages and foam cells were also noted. Immunohistochemical staining was positive for vimentin and CD68. The final diagnosis was benign fibrous histiocytoma (BFH) with siderotic and aneurysmal features, a rare variant. Because of the risk of local recurrence, wide re-excision was required.

**Discussion** The mechanism by which BFH arises is currently unclear. Competing theories declare it to be a reactive process in response to prior tissue injury or a neoplastic process. The patient’s history of mole removal at the site of his lesion is consistent with the former theory. The incidence of BFH is not known. It can be easily confused with other highly vascular tumors like Kaposi’s sarcoma due to the blue and black discoloration of the overlying skin. In both BFH and Kaposi’s, the blue and black discoloration is the result of hemorrhage into highly vascular spaces below the skin. Metastasis of BFH is rare and excision to negative margins is suggested only to prevent local recurrence. The large size of this patient’s mass was unusual, as BFH usually reaches up to 2.5 cm in diameter. Because the lesion extended deeply into subcutaneous fat, re-excision required fat removal to the gluteus maximus.

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**Case Report** There are multiple mimickers of soft skin tissue infections as well. However, pathergy phenomena narrows the diagnosis to a few etiologies such as: Bechet Syndrome, Pyoderma gangrenosum, and acute febrile neutrophilic dermatosis, known as Sweet Syndrome (SS). SS is associated to malignancy, morbid obesity, drug reaction, or autoimmune diseases. There is a new subtype of SS that resembles cellulitis. We present the challenging and successfully treated Cellulitis like Sweet Syndrome.

A 42-year-old female with Acute Lymphocytic Leukemia (ALL) relapse with +FLT3 and 91% of blasts in bone marrow biopsy. On day 3 of G-CSF, she developed puritic tender erythematous lesions in lower extremities. Punch skin biopsy revealed panniculitis, which was initially diagnosed as ALL-related erythema nodosum. G-CSF was discontinued. Two days later, the left venipuncture area and right buttock area of previous bone marrow biopsy developed a puritic non-blanching tender plaque-like lesions with associated bullous appearance and high fever episodes. The patient had increased inflammatory markers. Gama QuantiFERON and ANA test were negative. Patient was started on broad-spectrum antibiotics.

Despite antibiotic therapy there was no clinical improvement. Punch biopsy of left medial thigh revealed a dense and diffuse interstitial infiltrate of neutrophils with papillary edema, highly characteristic of Sweet Syndrome. The patient was started on Prednisone 1 mg/kg/day with a slow tapering down for 4 weeks. She had dramatic improvement and full recovery with resolution of lesions.

Cellulitis like Sweet Syndrome is a new and underdiagnosed pathology. Cutaneous lesions have a broad differential diagnosis and require high clinical suspicion for a targeted assessment and management. A detailed physical examination and interview was pivotal for narrowing differential diagnosis, specifically conditions associated with pathergy phenomena. As internists, we should be aware of mimickers of infectious process, cutaneous manifestations of malignancy and side effects of commonly used medications.

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**Case Report** Primary Myxoid Mesenchymal Tumor of Infancy (PMMTI) is an exceptionally rare sarcoma that primarily affects infants. An internal tandem duplication within the BCL6 coexpressor gene (BCOR) has been identified as the molecular hallmark of PMMTI. Surgical resection of the tumor is the mainstay of treatment which is typically curative, however in patients with unresectable tumors, disease progression and appropriate treatment protocols remain largely unknown. A healthy 8-week-old boy presented for decreased tone in bilateral lower extremities and rectum.
Physical examination revealed symmetrically decreased tone, areflexia, and minimal spontaneous movement of the lower extremities. Magnetic Resonance imaging (MRI) demonstrated a mixed cystic and solid lesion of the lower thoracic and lumbosacral spine. A thoracolumbar laminotomy with resection of the tumor was performed. Immunohistochemical analysis of the specimen demonstrated positive INI-1, BCL-6 and S-100 nuclear staining in addition to positive beta Catenin and Vimentin cytoplasmic staining. Targeted next generation RNA sequencing was positive for BCOR/CCNB3 fusion transcripts consistent with the diagnosis of BCOR-CCNB3 positive PMMTI. Two months after total gross resection, there was an increase in size of residual tumor with newly developed small extradural masses at the L4-S1 levels. The patient completed two cycles of chemotherapy per PMMTI-Modified NWTS-3, Regimen DD-RT (without XRT) and AREN0321 Regimen 1 with proton radiation therapy and is currently in remission. There are only a limited number of PMMTI cases reported in the literature. Due to the paucity of available data, the treatment outcome, and long-term survival in children with PMMTI is largely unknown. The internal tandem duplication of BCOR which has been identified as a molecular marker for PMMTI is identical to the mutation found in most cases of clear cell sarcoma of the kidney (CCSK). Therefore, the treatment approach for unresectable PMMTI tumors is based off regimens used to successfully treat CCSK. This report offers to expand the literature and data surrounding the successful treatment of an unresectable PMMTI tumor.

Abstracts

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COMBINATORIAL STRATEGY USING THERMAL INKJET BIOPRINTING, CHEMOTHERAPY, AND RADIATION IN HUMAN BREAST CANCER CELLS; AN IN VITRO CELL VIABILITY ASSESSMENT

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Purpose of Study In 2019 the American Cancer Association reported 252,700 new cases of BC in the United States and 41,000 deaths from metastatic disease. The FDA approved the combination of palbociclib plus letrozole in 2015 to treat hormonal receptor-positive and human epidermal growth factor receptor 2-positive/negative metastatic breast. Another treatment modality is radiation therapy, which is mostly given for palliation of patient symptoms. An optimal model for the in vitro study has not been determined. In our study, we used a thermal bioprinter to study the sensitivity of tumor cells to palbociclib and letrozole (PD-Let). We hypothesize that thermal bioprinting technology can be applied to predict treatment efficacy better.

Methods Used We treated thermal inkjet bioprinted (TIB) breast cancer cell lines (MCF7s and MDA-MB-231s) and normal breast epithelial cells (MCF10A) with PD-Let and with and without radiotherapy and compared cell viability.

Summary of Results Thermal inkjet bioprinted MCF7 cells have 8% higher viability than manually seeded (MS) cells when treated with 50 μM palbociclib and 10 μM letrozole combined with radiation exposure of 10 Gy in three fractions. TIB MDA-MB-231 cells have 6% higher viability than MS cells when treated with 10 μM PD - 10 μM Let without radiotherapy. TIB MCF-10As have a 4% higher viability than the MS cells when treated with 50 μM PD + 10 μM Let and 20 Gy in 5 fractions. Independent of growth conditions, MDA-MB-231 cells were initially sensitive to the combined therapy when a halt in cell proliferation was observed; however, more than 50% of the cell population survived both PD-Let and radiation therapies for this cell line only.

Conclusions Based on our results, we suggest that the TIB in vitro models could be a feasible strategy to develop and/or test new anticancer drugs.

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COVID-19 ASSOCIATED ACUTE CHEST SYNDROME IN CHILDREN WITH SICKLE CELL DISEASE

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Introduction In the context of the COVID-19 outbreak, there are increasing cases of acute chest syndrome (ACS) in patients with sickle cell disease (SCD) since both COVID-19 pneumonia and ACS share clinical findings. However, there is paucity of data in the literature regarding the treatment of ACS in patients with COVID-19. In a meta-analysis of randomized trials through the end of July 2020, dexamethasone was the only intervention that reduced mortality in patients with COVID-19. But in SCD, research shows corticosteroid use is associated with a potential for relapse vaso-occlusive crisis when rapidly discontinued, significantly longer length of stay, and a higher readmission rate within three days for ACS. To our knowledge, this is the first reported use of corticosteroids in a patient with sickle cell disease and ACS secondary to COVID-19.

Case Report Patient is a 9-year-old male with sickle cell disease type SS presented with fever, cough, and left flank pain for two days. RT-PCR by nasopharyngeal swab was positive for COVID-19. His chest x-ray showed multifocal pneumonia. Due to hypoxemic respiratory failure, he was admitted to PICU and required high flow nasal canula for support. He was given ceftriaxone and azithromycin for ACS and was started on enoxaparin prophylaxis and dexamethasone per institutional COVID-19 protocol. He initially received packed red blood cell transfusion on admission. Exchange transfusion was performed the following day given progressive pulmonary infiltrates and increasing requirement of respiratory support. Within twelve hours of completion of the exchange transfusion, he was able to wean off oxygen support. Prophylactic enoxaparin was continued until the day prior to discharge and dexamethasone was gradually weaned over a two week period. He was discharged from PICU on day four and discharged home after 7 days of hospitalization. He continued recovery at home without further complication.

Conclusion In children with SCD and COVID infection, ACS should be assessed and treated aggressively according to sickle cell disease management guidelines. Further studies are necessary to optimize the use of corticosteroids in this population.
COVID-19 PRESENTATION IN PATIENTS WITH SICKLE CELL DISEASE: A CASE SERIES

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Purpose of Study Severe Acute Respiratory Distress Syndrome Coronavirus 2, also known as COVID-19, has been shown to cause adverse health effects to those with comorbidities, one of which is sickle cell disease (SCD). By examining cases of SCD patients with COVID-19, we aim to examine the impact of COVID-19 on SCD patients and their clinical presentations.

Methods Used In this case series, we will report on five SCD patients who presented with symptoms ranging in severity from mildly symptomatic to weeklong hospitalizations.

Summary of Results The first case is a 30-year-old man with HbSS who was hospitalized for four days with vaso-occlusive crisis (VOC) and hypoxia due to COVID-19 infection. Case two is a 30-year-old man with HbSS who was hospitalized for two days after presenting to the ED for VOC and COVID-19. Case three is a 49-year-old woman with HbSC who presented to the ED with VOC and COVID-19. The fourth case is a 23-year-old man with HbSS who was hospitalized for eight days after he presented with VOC, acute chest syndrome, and COVID-19. The final case is a 25-year-old woman with HbSS who presented with cough and loss of taste who had mild symptoms.

Conclusions These cases show that the presentation of COVID-19 in SCD patients is not always the typical COVID-19 triad of cough, fever, and dyspnea that clinicians recognize. Recent case reports on SCD patients have indicated that COVID-19 can trigger VOC in SCD patients by increasing inflammatory cytokines such as interleukin-6. Thus patients with SCD and COVID-19 can present with a VOC rather than typical COVID-19 symptoms, as seen in four of these cases. Moreover, as seen in this series, the findings on chest radiologic imaging for this subset of patients can also differ from the typical presentation of the COVID-19 chest radiologic findings.

In conclusion, we recommend that SCD patients with COVID-19 exposure or who present with VOC, even in the absence of the typical signs and symptoms of COVID-19 infection, be tested for COVID-19. Individuals, especially adults, with SCD commonly have preexisting multi-organ dysfunction and delicate immune system which put them at increased risk for COVID-19 infection-related morbidity and mortality particularly when this infection is unrecognized and improperly treated.

ANTI WHO? A CASE OF SMALL CELL LUNG CANCER PRESENTING AS ANTI-HU ANTIBODY-MEDIATED PARANEOPLASTIC ENCEPHALITIS

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10.1136/jim-2021-SRMC.333

Case Report Patient is a 60 year old male with long-standing tobacco use who initially presented with worsening lower extremity weakness, was found to have cervical spine stenosis and had surgical fixation. However, symptoms progressed and he later developed diplopia, dysgeusia and weight loss, which prompted his visit to the Emergency Department (ED). He was admitted to Neurology service and had extensive work-up that revealed anti-Hu antibodies suggestive of paraneoplastic encephalitis. He was treated with steroids and intravenous immunoglobulin (IVIG) and had mild improvement and was discharged with plans to follow-up with Oncology as an outpatient, though initial imaging did not show any masses. He was seen 1 week after discharge and had positron emission tomography-computed tomography (PET-CT) which showed fludeoxyglucose (FDG) avid right parotid mass and left supraclavicular node. Patient scheduled for an outpatient biopsy but before this was done, he re-presented to ED with new-onset auditory hallucinations and choreiform movements and was again admitted to the Neurology service. He was started on plasma exchange (PLEX) and steroids for treatment and interventional radiology (IR) performed biopsy of right parotid mass, which showed a Warthin’s tumor. Despite treatment, patient’s neurologic status continued to decline and Oncology was consulted for further work-up and management given strong suspicion of underlying malignancy. Patient subsequently transferred to Oncology service and had a repeat IR biopsies of parotid mass and supraclavicular node, both of which were negative for malignancy. Thoracic surgery then performed excisional biopsy of left supraclavicular node which did show small cell carcinoma and afterward a repeat CT chest, abdomen and pelvis demonstrated evidence of liver metastases. Ultimately, patient was started on treatment with carboplatin and etoposide for small cell carcinoma of presumed lung origin; however, his neurologic status never improved and he was later discharged home on hospice and expired shortly after discharge.

A CURIOUS CASE OF MELANOMA AND PANCYTOPENIA

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Case Report A 64 year old male with cutaneous melanoma of the right shoulder with involvement of the ipsilateral axillary and supraclavicular lymph nodes and distant metastases to the stomach and duodenum presented to the Emergency Department with asthenia and dark colored urine. He was receiving adjuvant radiotherapy and systemic therapy with nivolumab after undergoing wide local excision of the shoulder mass and pelvis demonstrated evidence of liver metastases. Ultimately, patient was started on treatment with carboplatin and etoposide for small cell carcinoma of presumed lung origin; however, his neurologic status never improved and he was later discharged home on hospice and expired shortly after discharge.
disseminated melanoma in the bone marrow. Ultimately, the patient chose to transition to hospice care at home, where he died five days later.

Discussion Malignant melanoma accounts for 2% of all malignancies, but worldwide incidence is increasing. Metastatic melanoma most commonly involves draining lymph nodes as well as adjacent skin, but eventually metastasizes to distant visceral organs. Metastasis of melanoma to the bone marrow is exceedingly rare, with widespread dissemination occurring in approximately 5% of patients. This case serves as a reminder of the aggressive nature of metastatic melanoma and highlights the importance of bone marrow evaluation in patients presenting with pancytopenia in the setting of widely metastatic disease.

Abstract 335

CELL CYCLE ANALYSIS OF RENAL CELL CARCINOMA UTILIZING FLUORESCENT UBIQUITINATION-BASED CELL CYCLE INDICATOR (FUCCI)

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Objectives Aberrant progression through the cell cycle is a well-established feature of many solid cancers. Many of these cell-cycle checkpoints in cancer cells have defects that lead to uncontrolled growth, proliferation and increased tumorigenesis. In this study we have utilized a technique that has allowed tracking of renal cell carcinoma (RCC) cells in vitro through cell cycle progression. Fluorescently tagged molecules allowed for differentiation between the G1 vs. S/G2/M phases in the SN12K1 RCC cell line.

Methods Used In order to create a stable RCC cell line expressing the FUCCI constructs, mKO2-hCdt1 (G1 phase/red fluorescent protein or RFP) and mAG-hGem (S, G2, M phase/green fluorescent protein or GFP) were subcloned into a lentiviral expression vector system.

Summary of Results Fluorescent ubiquitination-based cell cycle indicator differentiated SN12K1 cells in vitro. The GFP expression in nuclei shows the cells in S/G2/M phase, while as the RFP expression shows the cells in G1/G0 phase. The dynamic color change, from red-through-yellow-to-green, represents the progression through cell cycle and division. Flow cytometry of the cells also stained with Hoechst DNA probe allowed validation of which aspect of the cell cycle the SN12K1 cells were in (see figure 1).

Abstract 335 Figure 1

Conclusions We have incorporated the FUCCI genetic constructs into RCC cells, creating a simple and efficient method for labeling cells and following their cell cycle progression. Further work will involve conversion of this 2D culture to a 3-Dimensional aggregate model that will allow better resolution of the tumor microenvironment and its implications on the cell cycle when treated with therapeutic targets.

Abstract 336

SCALP ERYTHEMA AND NODULES: PRIMARY CUTANEOUS NON-HODGKIN FOLLICLE CENTER B-CELL LYMPHOMA!

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10.1136/jim-2021-SRMC.336

Case Report A 71-year-old gentleman with past medical history of melanoma presented with nodular lesions on the scalp. The nodules were biopsied, pathology showed a mixture of B and T cell lymphoid proliferation but not diagnostic of lymphoma. Initially the lesions resolved but then became more notable 11 months later. Lesions were pruritic, but improved after 2 weeks of topical hydrocortisone therapy. He denied any fever, night sweats, anorexia, or weight loss. On examination, there were 3 larger nodular lesions measuring 1 cm and 4 smaller lesions on the forehead. The lesions were hard in consistency with an erythematous base, but without tenderness. There were no palpable lymph nodes or hepatosplenomegaly. Two punch biopsies were taken.

Both specimens confirmed the diagnosis of primary cutaneous non-Hodgkin follicle center B-cell lymphoma. The pathology report favored a primary cutaneous process over a systemic process. However, the patient was evaluated to exclude systemic disease with imaging studies and bilateral bone marrow biopsies. There was no detection of systemic involvement. The patient received electron beam radiation therapy with good results. However, subsequently 2 other small lesions developed on the forehead. Punch biopsy showed
Small cell carcinoma (SCC) is an aggressive malignancy, commonly involving the lung. Mediastinal small cell carcinoma (MSCC) is a rare entity of SCC. We report a case of MSCC with an atypical presentation with stridor and angioedema. A 68-year-old female with history of recurrent steroid-responsive angioedema presented with stridor and angioedema of her face and lips. Work-up in the past failed to reveal any complement deficiency. Laboratory evaluation was consistent with anemia of chronic disease and hypoponatremia likely due to SADH. Beta HCG and AFP levels were normal. CT scan of the neck revealed a 7.7 cm anterior mediastinal mass with suprACLavicular and precrANial lymphadenopathy. Abdominal imaging showed a 1.6 cm hypodense liver lesion. CT brain did not reveal intracranial disease. Owing to the proximity of the liver lesion to the diaphragm, the anterior mediastinal mass was biopsied which confirmed the diagnosis of small cell carcinoma, with focal positivity for TTF-1 and diffuse positivity to synaptophysin, chromogranin and CD56. Due to concern for airway compromise secondary to the mass effect on the trachea, patient received inpatient chemotherapy with Carboplatin/Etoposide with marked improvement in her dyspnea. Patient’s angioedema also improved suggesting paraneoplastic syndrome, improving with treatment. In MSCC, often no intrapulmonary lesion is identified and mass usually arises from mediastinal lymph nodes; however thymic origin cannot be ruled out. It is often challenging to differentiate MSCC from other anterior mediastinal masses, including thymoma and lymphomas. As our patient presented with angioedema, which could be associated with thymoma and myasthenia gravis in patients with heterozygous C2 deficiency, it made the diagnosis of SCC challenging. However, normal complement levels in the past and hepatic metastasis along with the biopsy results favored the diagnosis of SCC.

Treatment of small cell carcinoma including MSCC includes platinum agents (carboplatin/cisplatin) combined with etoposide. A thorough workup of mediastinal mass is crucial to exclude differential diagnoses such as thymoma, especially with such an atypical presentation.

Case Report We describe a case of a 2-year-old patient with relapsed AML who had persistent fevers while immunocompromised and was found to have a disseminated yeast infection caused by a species resistant to her prophylactic fungal medication.

Methods Used Chart review.

Summary of Results A 2-year-old female with a history of an allogenic stem cell transplant secondary to acute myeloid leukemia (AML-M7) presented to the emergency department for fever. She was undergoing salvage chemotherapy and was on prophylactic Bactrim, Fluconazole, Acyclovir, and oral Vancomycin for a history of recurrent C. difficile Colitis. C-reactive protein was elevated at 126 mg/L and her absolute neutrophil count was more than 10K/uL. At admission, blood cultures were obtained and Cefepime started. A bone marrow biopsy revealed an aberrant myeloid progenitor population of 31%, consistent with residual disease. Blood cultures remained negative with abatement of fevers and Cefepime was stopped. She became febrile again 14 days later, with fevers remaining consistently around 105F and unresponsive to acetaminophen. Blood cultures obtained quickly grew enterococcus and candidiasis. Amphotericin B therapy was started, but blood cultures continued to grow Candida Krusei despite therapy. Due to persistent fevers, the anti-fungal coverage was switched to Micafungin. A rash was subsequently noted raising concerns of a drug reaction, prompting a switch to Caspofungin. Fevers of 105F lasted for 8 days, when the patient began to have improvement in her fever curve and clinical appearance despite continuation of the rash. The rash was biopsied, revealing Candida Krusei. A Chest CT showed a pneumonia that was thought to be an invasive Candida infection. An eye exam showed ocular candidiasis with multiple fungal balls in her right eye. The patient was eventually discharged home on hospice care with continued treatment of her fungal infection with Voriconazole.

Conclusion In order to reduce antifungal resistance, antifungal use in a patient needs to be reevaluated at all intervals.
Discussion Dysarthria is a rare complication of FOLFIRINOX that has been reported in few case reports. In all reported cases, the dysarthria was rapid and reversible. It has been reported that irinotecan-related cholinergic syndromes are induced by the coadministration of oxaliplatin, as both may exacerbate the cholinergic effects of each drug. Atropine is given as a premedication; however, some patients still report anticholinergic symptoms, such as dizziness, confusion, tachycardia, and nausea. We propose that dysarthria may be an anticholinergic consequence of this regimen, due to the high concentration of cholinergic receptors on the hypoglossal nerve, which is responsible for speech function.

Conclusion Dysarthria is a rare side effect that may occur with the administration of FOLFIRINOX. The transient and reversible nature of this side effect allows for patients to continue the treatment regimen without cessation of chemotherapy. This is especially important in patients receiving treatment for curative intent.

### Abstracts

#### 340 RARE CASE OF A PEDIATRIC INTRACRANIAL INFLAMMATORY MYOFIBROBLASTIC TUMOR

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Case Report Inflammatory myofibroblastic tumor (IMT) is a rare, primarily pediatric cancer associated with anaplastic lymphoma kinase (ALK) gene rearrangement in approximately 50% of cases. There are roughly 100 reported cases of intracranial IMT in the literature. This is the first report of intracranial IMT with a DCTN1-ALK fusion, and 1 of only 4 reported IMT’s with this fusion.

A 17-year-old male presented with a 2-month history of headaches, blurry vision, and slowed mentation with acute onset of difficulty walking. MRI of the brain confirmed a heterogenous mass (7.9 * 5.2 * 5.0 cm) located in the left parietooccipital lobe with internal hemorrhage, vasogenic edema, and mild hydrocephalus. A craniotomy with partial surgical resection of the mass, due to excessive bleeding and location, was performed. Histopathology was consistent with a hypercellular, high grade spindle cell neoplasm diagnosed as an undifferentiated spindle cell CNS sarcoma. Next generation gene sequencing discovered a DCTN1-ALK fusion. This led to a supplemental pathology review from a soft tissue sarcoma expert who concluded that the spindle cell proliferation in the context of diffusely positive ALK immunostaining was more consistent with IMT.

The patient was initially treated with ifosfamide, cyclophosphamide, and etoposide (ICE) intensive chemotherapy but was switched to alectinib, an oral ALK inhibitor, once the fusion was identified. After starting alectinib, he developed a diffuse rash without anaphylaxis. He was switched to entrectinib, a multikinase inhibitor with similar CNS penetration and proven efficacy, in favor of undergoing alectinib desensitization therapy. He has tolerated the entrectinib well. There is an upcoming 6 month post-surgery MRI to determine tumor response.

IMT is a rare but important diagnostic consideration when evaluating an intracranial mass in a pediatric patient as it has a better prognosis than other tumors. Gene sequencing is crucial for providing the correct diagnosis and guiding treatment with targeted immunotherapy. The patient’s tolerance and response to entrectinib after developing a hypersensitivity to alectinib supports alternative ALK inhibitor use as a substitute to desensitization therapy, which can be time intensive and carry risk.

#### 341 ASSOCIATION BETWEEN INDIVIDUAL TUMOR GENETIC ALTERATIONS AND CLINICAL OUTCOMES AMONG HISPANIC-LATINO PATIENT WITH METASTATIC COLORECTAL CANCER

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Purpose of Study Colorectal cancer (CRC) is the third most common cause of cancer among men and women in the USA. In 2020, an estimated 147,950 new cases of CRC will be diagnosed in the US, and 53,200 people will die from CRC. The incidence of CRC among Hispanics living in the USA varies according to their country of origin. The incidence of CRC is dramatically increasing among younger Hispanics-Latino (HL) patients compared to the non-Hispanic white (NHW) and African American (AA). Also, HL patients usually present with a more advanced stage and have a higher mortality rate. The molecular biology of CRC in HL is poorly characterized.

The aim of the study was to characterize the association of individual patient tumor mutation profiles with clinical outcomes.

Methods Used For this study we retrospectively collected and analyzed the data from next generation sequencing (Foundation Medicine) of 49 female patients with mCRC, treated at Texas Tech Breast Care Center from 2015 to 2019. We identified top 5 most frequent alterations and correlated with the clinical outcome.

Summary of Results Of 48 patients with mCRC, (98%) identified as HL, and 1 (2%) as NHW. (98%) had stage IV disease, and (2%) had stage IIIc/IV. The most commonly mutated genes were: APC 77%, TP53 60%, KRAS 48%, NOTCH 25%, BRCA 1&2 23%. In contrast, data from the national and international colon cancer databases showed a significantly lower frequency of those mutations APC 77%, TP53 60%, KRAS 48%, NOTCH 25%, BRCA 1&2 23% among AA and NHW patients. Our study demonstrated significantly worse clinical outcomes for patients with combination of mutations in TP52, APC, and KRAS.

Conclusions In conclusion, this study is the first to identify the most common genetic alterations among HL patients with metastatic CRC. We demonstrated statistically significant higher frequencies of mutation in TP53, APC, KRAS, NOTCH, and BRCA pathways among HL patients with mCRC compared to international databases.

#### 342 REMARKABLE RESPONSE TO COMBINED IMMUNOCHEMOTHERAPY IN PATIENTS WITH METASTATIC TRIPLE-NEGATIVE BREAST CANCER

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Purpose of Study Metastatic triple-negative breast cancer (mTNBC) is one of the most aggressive forms of breast cancer. There is a paucity of clinical data on the immunotherapy treatment in this setting.

Methods Used We report a case of a 38-year-old African American woman with metastatic TNBC. She received two cycles of neoadjuvant chemotherapy with carboplatin and nab-paclitaxel, followed by one cycle of nab-paclitaxel and nab-paclitaxel followed by two cycles of pembrolizumab and nab-paclitaxel. A complete radiographic and clinical remission was achieved.

Results This is the first case of a complete radiographic and clinical remission with pembrolizumab and nab-paclitaxel for metastatic mTNBC. Pembrolizumab has been associated with a higher resistance to ipilimumab and nivolumab due to the highly mutated CD8+ T-cell phenotype of mTNBC.

Conclusions Pembrolizumab and nab-paclitaxel demonstrated a remarkable response for metastatic mTNBC in this case.
**Case Report** Progress in immunotherapy (IT) has shifted treatment paradigms for multiple malignancies. In March 2019, the combination of nab-paclitaxel and atezolizumab was approved by the FDA for patients with PD-L1 positive metastatic triple-negative breast cancer based on positive results of the Impassion130 trial. Although numerous studies have examined the prognostic role of PD-L1, the value of this test remains controversial.

**Results** Here, we presented the cases of three heavily pretreated women with mTNBC who exhibited remarkable responses to combined IT and chemotherapy despite undetectable PD-L1.

**Conclusion** In our opinion, the current FDA-approved assessment for PD-L1 expression is a reasonable tool for deciding whether to start IT. However, because this approach has many limitations, patients with undetectable PD-L1 expression should still be considered for IT.

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**Abstracts**

**343 CYTOKINE HYPERINFLAMMATION FROM A COMMON VIRAL INFECTION**

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10.1136/jim-2021-SRMC.343

**Introduction** Hemophagocytic lymphocytosis (HLH) is an immune disorder of unregulated activation of lymphohistocytotic cells and hypercytokinemia characterized by clinical signs and symptoms of extreme inflammation. Secondary HLH has been previously reported to occur with Epstein-Barr virus (EBV) infection. Here we report a case of HLH secondary to EBV and the unique clinical features and treatment paradigm of this unusual disease.

**Case** A 57-year-old Caucasian male with celiac disease and gastrointestinal reflux disease presented with fevers, chills, headache, and diffuse weakness. Infectious work-up revealed only a positive mononucleosis antibody test. Complete blood count revealed pancytopenia that prompted bone marrow evaluation. Bone marrow biopsy revealed the presence of a normocellular marrow with notable rare hemophagocytes, prompting concern for HLH. We obtained an EBV PCR quantification which was elevated at 11300 IU/mL. Patient clinically met diagnostic criteria for HLH with fever greater than 7 days, splenomegaly, pancytopenia, triglycerides of 550 mg/dL, ferritin of 78,769 ng/mL, and soluble interleukin-2 receptor of 4403 pg/mL. Patient was noted to have worsening clinical deterioration with acute encephalopathy. Cerebral spinal fluid analysis showed small lymphocytes and macrophages.

Our patient was started on treatment with IVIG and standard HLH-94 protocol that combines high dose dexamethasone and etoposide. Due to concern of CNS involvement, he received intrathecal methotrexate and hydrocortisone, which resulted in improvement of his encephalopathy. Patient was also given Rituxan 375 mg/m² weekly to reduce B-cells which serve as an EBV reservoir. The patient showed rapid clinical improvement and repeat measurement of EBV PCR was undetected with subsequent improvement in all serum markers. Patient was continued on treatment per protocol with clinical improvement and was discharged with close follow up outpatient.

**Discussion** Early recognition and initiation of HLH-directed therapy remain key to avoid multiorgan dysfunction and improving survival. The prognosis for EBV associated HLH has improved greatly when promptly treated with the HLH-94 protocol. We present this case to highlight an unusual etiology of a rare disease and review both the diagnostic criteria and standard treatment.

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**344 MYCOBACTERIUM AVIUM COMPLEX INFECTION COFOUNDING TREATMENT OF Hodgkin lymphoma**

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**Case Report** When diagnosing Hodgkin lymphoma, a positron emission tomography-computed tomography (PET/CT) scan used with fludeoxyglucose F18 (FDG) is the imaging modality of choice. FDG acts as an analog of glucose tagged with fluorine-18 and it is metabolized similarly. Tissues with a higher rate of glycolysis show a greater uptake of FDG on PET imaging. Higher rates of glycolysis in tissues are seen in malignancy, infection, and inflammation.

**Case** A 46-year-old woman with a history of mycobacterium avium complex (MAC) infection who began treatment one year prior and was currently receiving ethambutol, rifampin, and azithromycin, continued to have progressive weight loss, night sweats, fatigue, and weakness. An excisional lymph node biopsy was performed which revealed classic Hodgkin lymphoma with mixed cellularity. The biopsy was also positive for acid-fast bacilli. The patient received two cycles of adriamycin, bleomycin, vinblastine, and dacarbazine. Repeat PET/CT demonstrated an overall improvement in lymphadenopathy but with an elevated Deauville score of 5. Due to the persistently elevated Deauville score, the chemotherapy regimen was escalated to four cycles of bleomycin, etoposide, doxorubicin, cyclophosphamide, vincristine, procarbazine, and prednisone. Further FDG PET/CT scan also revealed a Deauville score of 5. Repeat biopsy favored MAC infection and was negative for lymphoma. Ethambutol and azithromycin were continued for the MAC infection. The patient was determined to be remission from her Hodgkin lymphoma and was continued she remained on surveillance for Hodgkin lymphoma.

**Discussion** This case highlights the importance of viewing the entire clinical context when evaluating PET/CT scans. FDG uptake by inflammatory and infectious processes can be mistaken for malignancy. Common conditions that can confound FDG PET/CT include infections, recent procedures, and recent radiation therapy. Recognizing these pitfalls can aid in avoiding iatrogenic injury from chemotherapy toxicities, radiation therapy, and unneeded biopsies.

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**345 PLEXUS SLIM®-INDUCED IMMUNE THROMBOCYTOPENIC PURPURA: A CASE REPORT**

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**Introduction** Drug-induced immune thrombocytopenia (DITP) is commonly seen in patients with acute thrombocytopenia which cannot be explained by causes other than the presence of convincing drug-induced etiology. There are multiple reports of thrombocytopenia associated with alternative
medicines, herbal remedies, nutritional supplements, foods and beverages. We present a rare case of dietary drug-induced ITP.

**Case presentation** This is a 30-year-old female with a past medical history of polycystic ovarian syndrome and hypertension who presented to an internal medicine clinic for a chief complaint of ‘easy bruising’ for approximately 3 weeks in duration. CBC revealed a platelet count of 4 thousand and the patient was subsequently admitted to the hospital for severe thrombocytopenia. She was transfused 2 units of platelets. On questioning of dietary habits and history, the patient reported that she has been taking a weight loss supplement; Plexus Slim® for a few weeks. The diagnosis of drug-induced ITP was made, and the patient was subsequently treated with Prednisone 100 mg 1x daily and IVIG 1 g/kg for 2 days. Over the course of 3 days, the patient’s platelets increased to 53 thousand. The patient was discharged on a steroid taper and followed up in the clinic four weeks later and her platelet count was 225 thousand.

**Discussion** Drug-induced ITP is a common underlying cause of new-onset thrombocytopenia. Unfortunately, it is often difficult to determine the precipitating event of platelet destruction. Although difficult to objectively prove, this case represents a clinical scenario in which a common weight loss supplement potentially led to severe levels of thrombocytopenia. Chromium picolinate and garcinia cambogia are both ingredients used in multiple weight loss supplements and have been significantly associated with ITP per literature. Due to lack of FDA regulation these common ingredients are not appropriately investigated for routine safe consumption.

**Conclusion** Our case highlights the importance of FDA regulation for supplements, a need for proper investigation of herbal compounds, and lastly the need for a thorough subjective history in the context of presenting thrombocytopenia.
calculated. Haemophilus vaccine immunization rates, a routine vaccine given to all children, was compared to four recommended vaccines using the two-proportion Z-test.

Summary of Results The study population consisted of 127 children with sickle cell disease; information could not be found for 4 children. Coverage for Hib coverage was statistically higher than PPSV 23 (p<0.001), Menveo/Menactra (p<0.001), and MenB (p<0.001).

Conclusions Children with sickle cell disease are not receiving the recommended immunizations for encapsulated bacteria which could lead to morbidity and mortality. Systematic quality improvement measures are currently being implemented. Further study involving other regional hematolgy clinics is recommended.

### 348 INTRAVESICULAR BCG THERAPY FOR BLADDER CANCER: A RARE AND UNUSUAL CAUSE OF CRYOGLOBULINEMIC GLomerulonephritis

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Introduction Intravesicular Bacillus Calmette-Guerin (BCG) immunotherapy is used for prophylaxis and treatment of non-muscle invasive (T1) bladder cancer. BCG triggers an immune response in the bladder to suppress tumor growth. We present a rare case of cryoglobulinemic glomerulonephritis (CGN) in a patient treated with BCG for urothelial carcinoma.

Case A 78-year-old man was diagnosed with high grade papillary urothelial carcinoma. He was twice treated with transurethral tumor resection followed by 6 treatments of intravesical BCG. He presented 4 weeks after his last treatment with dyspnea, orthopnea, lower extremity edema, and low urinary output. Evaluation showed creatinine 2.88 mg/dL (baseline 1.8), proteinuria >3.5 g/day, pancytopenia, low C3 & C4, PR 3 +, HCV antibody reactive, cryoglobulin positive, IgG kappa (k) M-Spike at 0.7 g/dL, elevation of k and lambda (l) free light chains. Biopsy showed hypercellular marrow without plasma cell proliferative disorder. Renal biopsy showed mesangial proliferation, diffuse moderate expansion, and variable capillary loop thickening. Immunofluorescence microscopy showed positive granular glomerular staining for IgM (3+), C3 (3+), C1q (2+), and l light chain (1+). Numerous casts were stained positive for IgA. Electron microscopy showed partial foot process effacement, subendothelial dense deposits, and focal mesangial interposition with double contour basement membrane. These findings were consistent with CGN. Methylprednisolone was started for worsening renal function and concern of GN. Cryoglobulinemia is seen in patients with active HCV, however our patient had a negative HCV RNA PCR test indicating false positive HCV antibody testing possibly due to polyclonal B-cell activation by BCG. Renal function continued to deteriorate and required hemodialysis.

Discussion Intravesicular BCG treatment has been linked with tubulointerstitial pyelonephritis, mesangioproliferative glomerulonephritis, and renal failure syndrome in less than 1% of cases. Although CGN has been commonly associated with HCV and disseminated mycobacterium bovis infection, our patient had neither. His CGN is likely associated with intravesicular BCG treatment.

### 349 OXYGEN NEEDS AND HOSPITAL STAY REDUCTION IN 16 COVID-19 PATIENTS, INCLUDING THOSE WITH HEMATOLOGICAL MALIGNANCY, AFTER CONVALESCENT PLASMA ADMINISTRATION

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Purpose of Study In the absence of effective and readily available therapy for COVID-19, immediate interventions to improve its mortality are a public health emergency. COVID-19 convalescent plasma (CCP) carries antibodies against SARS-CoV-2 and represents a promising approach. Studies regarding the clinical use of CCP have been inconsistent, and the optimal timing and frequency of CCP infusion remain largely unknown. Similarly, the role of CCP in cancer patients, particularly those with hematological malignancies (HM), remains unknown. Herein we describe the outcomes of 16 critically ill patients with COVID-19, including HM, who were treated with CCP with marked clinical improvement.

Methods Used CCP donors donated 2–4 units each (200 ml per unit), 18 to 56 days following full recovery from COVID-19. 16 patients received CCP following informed consent. 5 patients were treated after obtaining individual emergency Investigational New Drug (eIND) from the FDA, while the remaining 11 patients were enrolled in our investigator-initiated clinical trial, Expanded Access to Convalescent Plasma to Treat and Prevent Pulmonary Complications Associated With COVID-19 (clinicaltrials.gov Identifier: NCT04358211).

Summary of Results 10 males and 6 females between the ages of 24–81 were treated, 6 of which with HM. The Spike protein IgG titers on CCP units used to treat patient-3, patient-6, patient-8, patient-9, patient-11, patient-13, patient-14, patient-15, and patient-16 were 1:1600, 1:3200, 1:3200, 1:800, 1:400, 1:1600, 1:3200, 1:6400, and 1:3200, respectively. At the time of CCP infusion, patients were either mechanically ventilated (5), on noninvasive support with high jow nasal cannula (4), bilevel ventilation (1), or nasal cannula (5). Only 1 patient was on room air at the time of CCP infusion. Steady improvement in oxygenation levels was observed following each CCP infusion. All of the 5 intubated patients were extubated. The remaining 11 showed a dramatic decline in oxygen needs.

Conclusions While a randomized controlled clinical trial remains the gold standard, our limited data represent a signal that CCP is safe and efficacious in COVID-19 and underscores a potential role for passive immunity in this disease.

### 350 POST-TRANSPLANT CYCLOPHOSPHAMIDE-INDUCED HEMORRHAGIC CYSTITIS TREATED WITH HYPERBARIC OXYGEN

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Background To date, there are only a few case reports of cyclophosphamide (Cy)-induced hemorrhagic cystitis (HC) in adult or pediatric allogeneic stem cell transplant (SCT) patients treated successfully with hyperbaric oxygen (HBO). In all the reported cases, Cy was used as part of the conditioning regimen, rather than post-transplant for graft-versus-host-disease (GVHD) prophylaxis. More recently, the risk of HC in

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allogeneic SCT is further increased by the widespread use of post-transplantation cyclophosphamide (PTCy) as a highly effective strategy for GVHD prophylaxis. To the best of our knowledge, this is the first case reported of PTCy-induced HC successfully treated with HBO.

**Case Presentation** A 58-year-old male with acute myelogenous leukemia in complete response underwent consolidation with an allogeneic SCT. The GVHD prophylaxis consisted of PTCy (50 mg/kg on days +3 and +4 along with mesna at 50 mg/kg), tacrolimus (Tac) and mycophenolate mofetil (MMF). On day +70 post SCT, he presented with acute kidney injury, severe gross hematuria with clots, and difficulty to urinate. Patient did not have any history of pelvic irradiation, trauma, or urolithiasis. Complete blood count showed severe anemia and thrombocytopenia requiring multiple blood and platelets transfusions. The patient was initially treated with continuous bladder irrigation, urinary diversion, aminocaproic acid, conjugated estrogens, and transfusion support. However, gross hematuria persisted. Therefore, the patient was started on daily, Monday through Friday, HBO treatment sessions with 100% oxygen at 2.4 atm for 110 minutes with two 5-minute air-breaks on day +110 post SCT. After 20 sessions, the frequency of required bladder irrigations decreased, and the hematuria resolved. Currently, the patient is on day +300, remains without hematuria and transfusion independent.

**Conclusions** With the adoption of PTCy as a new standard for GVHD prophylaxis, we anticipate that HC may become a more commonly encountered complication in allogeneic SCT patients. HBO can be a safe, noninvasive, alternative treatment modality for PTCy-induced HC developing in allogeneic SCT patients.

**A RARE CASE OF PRIMARY SQUAMOUS CELL CARCINOMA OF THE BREAST**

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**Introduction** Primary Squamous cell carcinoma of the breast is a rare entity, constituting less than 0.1% of all breast cancers. We report a case of a 46-year-old female who was diagnosed with stage 4 squamous cell carcinoma of the breast.

**Case Report** A 46-year-old female with no reported past medical history presented with a large fungating open wound over her right breast. This started as a painful mass in her right breast 5 months ago. Later the skin over the mass ulcerated draining blood-stained purulent fluid.

She never had a mammogram. Her mother and maternal aunt were diagnosed with breast cancer in their 50s and a great grandmother in her 20s. She had a 30-pack year smoking history. Physical examination showed a large fungating ulcer on her right chest that extended across the midline. A Computed tomography scan showed a 19 × 12 cm ulcerating mass in her right breast with metastasis in the contralateral breast, pericardium, sternum, lungs and liver. A punch biopsy of the right breast lesion showed features of squamous differentiation with strong p63 and Cytokeratin (CK) 5/6 expression. Carcinoma cells were negative for estrogen receptor (ER), progesterone receptor (PR) and Human epidermal growth factor receptor 2 (HER2). GATA-3 was positive favoring breast origin.

A diagnosis of primary breast squamous cell carcinoma was made given the prominent squamous features on biopsy, a bulky mass in the breast and the multi-site small metastatic lesions. The patient opted for hospice care before any treatment could be offered.

**Discussion** The prognosis and treatment of this entity still remain unclear due to paucity of data. So far studies have shown it to be an aggressive tumor with poor prognosis. Tumors are usually ER/PR and HER2 receptor negative, making hormone therapy and anti-Her2 therapy ineffective. They do not respond to usual chemotherapeutic regimens used for ductal breast cancer. Clinical trials including large series of these rare tumors are needed to increase our knowledge and to improve patient outcome.

**A RARE CASE OF PRIMARY MEDIASTINAL RHABDOMYSARCOMA IN ADULT PRESENTING AS PERICARDIAL TAMponade**

M Joseph*, M Khalil, A Roy, JG Habib. University of Arkansas for Medical Sciences, Little Rock, AR

**Introduction** Rhabdomyosarcoma is a malignant neoplasm of mesenchymal cells, showing varying degrees of striated muscle cell differentiation. It predominantly occurs in children while rarely in adults. Soft tissue sarcomas constitute less than 1% of all adult malignancies, and rhabdomyosarcomas accounts for 3% of all soft tissue sarcomas. We report a case of a large mediastinal rhabdomyosarcoma diagnosed in a 64-year-old adult.

**Case Report** 64-year-old male with past medical history of hypertension, hyperlipidemia, coronary artery disease, seizure disorder presented to the hospital after an episode of syncope at home. He had dyspnea on exertion, hoarseness of his voice and significant dysphagia of one-month duration. Examination showed low blood pressure, jugular venous distension and muffled heart sounds. An echocardiogram showed a large pericardial effusion and he underwent emergent pericardial window for possible tamponade. Computed tomogram (CT) chest showed a large mass in anterior mediastinum measuring 12 cm × 12.6 cm × 13.9 cm with extensive encroachment and infiltration of large vessels. Biopsy of the mass was suggestive of primary pleomorphic rhabdomyosarcoma with prominent rhabdomyoblastic differentiation. A staging CT of the abdomen and pelvis failed to show any evidence of disease elsewhere. He was planned to start chemotherapy with vincristine, doxorubicin and cyclophosphamide but before any treatment could be started, he succumbed due to shock which could be septic or obstructive.

**Discussion** Rhabdomyosarcoma may arise from a wide variety of locations, and are grossly classified into extremity and axial lesions. Most frequent axial lesions are from head and neck, paraspinal region and genitourinary system. Abdominal and thoracic origins are rare in children and adolescents. Adults can present more frequently with rare locations and have worser prognosis. Most mediastinal rhabdomyosarcoma occurs in association with germ cell tumor, teratoma or with thymic carcinosarcoma component. Those unassociated with these are extremely rare and only a few cases have been reported.
PARANEOPLASTIC CUSHING’S AS FIRST SIGN OF LUNG CARCINOID TRANSFORMATION TO SMALL CELL LUNG CARCINOMA

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Introduction Low-grade neuroendocrine tumors (carcinoid) of the lung are rare (~2%), and are the most common cause of ectopic Cushing’s syndrome. Some studies have shown ACTH producing neuroendocrine tumors behave more aggressively than others. Here we report a case of paraneoplastic Cushing’s syndrome as a sign of a typical carcinoid tumor transformation into aggressive small cell lung carcinoma.

Case Report In 2016, a 58-year-old female with poorly controlled diabetes mellitus on insulin was diagnosed with typical carcinoid of the right upper lung positive for TTF-1, CD56, synaptophysin, and keratin (Ki-67 at 5% and mitotic index < 2 per mm²). She continued on clinical observation until 2018 when imaging showed disease progression to contralateral lung and she was placed on octreotide. In the next two years the disease remained stable while on octreotide. In July 2020 she reported multiple falls due to bilateral leg weakness. Her glucose was 700–1000 mg/dL. Her baseline glucose was ~350 mg/dL with spikes to 554 mg/dL in the past year. Paraneoplastic antibody panel testing was negative. She reported continued bilateral leg weakness and had left groin striae on physical exam with AM cortisol 61 μg/dL and ACTH 269.2 pg/mL. Imaging showed diffuse vertebral and calvarial metastasis and innumerable hypodense liver lesions while her lung disease was stable. Liver lesion biopsy revealed small cell carcinoma positive for TTF-1, CD56, synaptophysin, and keratin with a Ki-67 >50%. She was treated with carboplatin and etoposide. Urgent chemotherapy requirement precluded the dexamethasone suppression, and urine and salivary cortisol tests. She required ketoconazole and dexamethasone for paraneoplastic Cushing’s.

Discussion This case serves as a reminder of the association of paraneoplastic Cushing’s with lung carcinoid, but restaging and re-biopsy of new lesions are crucial to determine new diagnosis and management.

Conclusion Physicians should be aware of the potential indications of new onset paraneoplastic Cushing’s in patients with low-grade neuroendocrine tumors.

SMALL CELL CARCINOMA WITH ENDOMETRIAL METASTASIS: A RARE SITE OF METASTASIS

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Case Report Small cell carcinoma of lung (SCLC) frequently presents with distant metastasis with commonest sites being liver, brain, bone and adrenals. Here we present a unique case of SCLC with metastasis to endometrium.

A 41-year-old female, with a 30 pack year smoking history presented with complaints of chest pain and shortness of breath for two months. Computed tomography of chest showed a large left suprahilar mass measuring 7.3 × 6.2 × 7 cm and a 2.3 × 2.1 cm subcarinal lymph node. CT abdomen and pelvis demonstrated innumerable hypoattenuated lesions in the liver concerning for metastasis. She underwent CT guided liver biopsy with pathology showing tumor cells with small cell histology, immunostains positive for synaptophysin, CD56, TTF-1 and Ki-67 index >90%, supporting the diagnosis of metastatic small cell carcinoma. Since she also had heavy vaginal bleeding, endometrial biopsy was done which demonstrated an atypical infiltrate composed of small blue cells diffusely positive for synaptophysin, CD56, TTF-1 and negative for CD10, PAX 8, chromogranin, findings consistent with high grade neuroendocrine carcinoma (small cell carcinoma). Patient was started on chemotherapy with standard carboplatin and etoposide with growth factor support. Patient subsequently developed pancytopenia with bone marrow biopsy showing extensive involvement of marrow with metastatic small cell carcinoma. She had a progressive decline in performance status and was transitioned to hospice.

The female genital tract is a rare site for metastasis from extragenital malignancies. Cervical, vaginal and ovarian metastasis are commoner than uterine metastasis. Small cell carcinoma in the endometrium should be differentiated from other endometrial malignancies like dedifferentiated endometrial adenocarcinoma, lymphomas and mixed Mullerian tumors. Both primary and metastatic endometrial small cell carcinoma have been described. In the setting of a lung mass and metastatic adenocarcinoma, the involvement of the endometrium is considered metastatic although primary endometrial small cell carcinoma has been rarely reported (in less than 2% of all gynecologic malignancies).

SEVERE VITAMIN B12 DEFICIENCY MIMICKING MYELODYSPLASTIC SYNDROME

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Case Report Vitamin B12 deficiency is a well-known cause of macrocytic anemia and bone marrow failure. We present a case of severe vitamin B12 deficiency with pancytopenia, misdiagnosed on bone marrow biopsy as MDS.

A 67-year-old male presented with complaints of fatigue and shortness of breath for one month. Labs revealed profound pancytopenia with WBC count 2.4 k/ul, Hemoglobin 4.0 g/dl, MCV 85.9 fL, platelets 114k/ul, reticulocyte count 24.2, total bilirubin 1.4, serum LDH 1264, Haptoglobin <30, folic acid 8.6, vitamin B12 level 65. Coombs negative hemolysis was noted. Peripheral smear showed no immature blasts. Bone marrow biopsy reported trilineage dysplasia with 85% hyper cellularity, 2–3% blasts and grade 2 reticulin fibrosis. Flow cytometry was suspicious for MDS with partial expression of CD56 on monocytes, cytogenetics revealed abnormal male karyotype with loss of Y chromosome in few cells. MDS FISH panel was negative. Also seen were less than 0.1% cells with PNH phenotype. Pancytopenia and hemolysis are seen in PNH but the small clonality of cells seen here does not meet criteria for diagnosis. Anti-parietal cell antibody was elevated suggesting pernicious anemia. Evidence of hemolysis is seen in 1.5% cases of pernicious anemia. Evidence of hemolysis. Patient was started on parenteral vitamin B12 supplementation. Peripheral blood counts showed improvement with WBC count 6.1k/ul, Hemoglobin 14.6g/dl, MCV 83.7 and platelets 275k/ul within twelve weeks of
replacement therapy. A repeat bone marrow biopsy performed after complete count recovery, showed normocellular bone marrow and no dysplastic changes. The cytogenetic and flow cytometric aberrations disappeared, suggesting that the initial marrow was a manifestation of megaloblastic anemia and atypia which raised concerns for MDS.

The ineffective hematopoiesis with impaired DNA synthesis caused by vitamin b12 deficiency is thought to cause genomic instability and chromosome fragility, which are transient and improve with vitamin substitution. Secondary causes of cytopenia should always be investigated, as a false diagnosis of MDS can be made leading to treatment considerations with hypomethylating agents.

**NOT YOUR TYPICAL MIXTURE: RARE MIXED B AND T CELL ACUTE LYMPHOCYTIC LEUKEMIA**

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**Case Report** Mixed phenotype acute leukemia is a rare type of leukemia with an incidence of <2% of all acute leukemias. Subtypes include B/myeloid, T/myeloid, B/T cell and B/T/myeloid with the latter two being exceedingly rare.

A 64-year-old AAM with DM, HTN and bladder cancer s/p cystectomy 9 years ago presented after treatment of sepsis secondary to UTI and PE with concern for acute leukemia. At the OSH, his CBC showed lymphocytogenic predominant leukocytosis, anemia, thrombocytopenia and peripheral blood flow cytometry showed T-cell ALL with 79% blasts. There was no prior history of radiation-chemotherapy. On admission, physical examination was non-contributory with no HSM or LAD. CBC showed ALC of 8,280. BM aspirate smears demonstrated hypercellular marrow with 83% lymphoid blasts. Flow-cytometric immunophenotypic studies on BM showed blasts with B-cell markers including CD19(dim), CD10, CD79a along with cytoplasmic CD3. Other findings were CD2+, CD4+, CD5 dim/variable+, CD7+, CD8-, CD20-, CD22-, CyCD34+, TdT variable+, MPO-, surface Ig-. BM biopsy showed sheets of PAX5+ cells, subset of which were CD79a+. This was compatible with B/T MPAL. Conventional karyotyping was negative for quantitative BCR/ABL p190mRNA. T-ALL and B-ALL FISH were negative for ABL1/BCR gene fusion t(9;22). Chromosome study was not possible due to insufficient sample. CSF was clear and bereft of blasts. The standard induction chemotherapy regimen for ALL was given. Hyper-CVAD induction Part-A with intrathecal prophylactic MTX was initiated and G-CSF was given at completion with resultant hematologic recovery. Clinical course was complicated by febrile neutropenia and DIC for which antibiotics and transfusions were given. At his follow up, PET scan did not show any LAP or FDG avid disease and blood counts are consistent with a hematologic remission. He will be admitted for Cycle 1 Part-B of Hyper-CVAD chemotherapy and will undergo BM evaluation after completion of this cycle.

B/T MPAL is an extremely rare disease and presents challenges in diagnosis and treatment. Cytogenetic alterations reported are t(9;22), t(q34;q11) and 11q23 abnormalities. Our case did not have t(9;22). Patients who achieve complete remission with Hyper-CVAD based regimens should be evaluated for allogeneic BM transplant as it may be the only cure for this rare leukemia.
MYC rearrangement define a subset ‘double/triple ‘hit lymphoma with poor prognosis. We present a case of DLBCL with surprising results against all odds. A 77-year-old male with ECOG performance status of 2, was admitted with weight loss, night sweating, worsening skin changes under his left armpit. Work up revealed hypercalcemia and spontaneous tumor lysis. PET/CT demonstrated FDG avid bilateral extensive axillary lymphadenopathy and splenomegaly. Left axillary node biopsy revealed DLBCL (ABC type). No diagnostic findings of double/triple hit lymphoma. Bone marrow biopsy and CSF analysis negative for involvement with DLBCL. Lactate dehydrogenase (LDH) level was 109. He was diagnosed with bulky stage II b DLBCL. Given his age, poor left ventricular function and compromised performance status he received one cycle of non-anthracycline based chemotherapy regimen R-CVP (Rituximab-Cytoscan/Vincristine/Prednisone) with prophylactic intrathecal methotrexate. Significant improvement in the skin/left axillary mass was noted within days. Due to significant decline in functional status patient and family declined further chemotherapy and opted for best supportive care. Follow up PET/CT at 6 months revealed near complete response. Patient’s clinical status has gradually improved and he remained disease free on imaging after 2 years of surveillance.

Treatment responses depend on the IPI (International Prognostic Index) such age, stage, performance status and LDH level. Anthracycline chemotherapy (4–6 cycles) is the cornerstone of treatment. This elderly patient with bulky aggressive NHL discontinued low intensity chemotherapy after one cycle only to demonstrate excellent response and prolonged disease-free survival.

INTERPLAY OF MUTATION-DRUG METABOLISM-PANCYTOPIA: A TRIAD OF CLINICAL CONSEQUENCE

J Kim*, H Mhadgut, K Chakraborty, S Singal. East Tennessee State University, Johnson City, TN

Case Report Dihydropyrimidine dehydrogenase (DPD) deficiency is a rare entity associated with severe toxicities after treatment with 5-fluorouracil (5-FU). We present a case of pancytopenia post FOLFOX (5-FU, leucovorin and oxaliplatin).

A 62-year-old male with metastatic adenocarcinoma of esophagus presented with pancytopenia after Cycle 1 of FOLFOX. He was afibrile, had moderate diarrhea and stable right upper quadrant tenderness and was previously treated for stage IVa esophageal adenocarcinoma two years back. Complete blood count (CBC) revealed white blood cell count (WBC) of 300/uL, absolute neutrophil count (ANC) of 300/ uL. (Grade 4 toxicity: <500/uL), hemoglobin of 11.3 g/dL and platelets of 74,000/uL. (Grade 2: 50,000/uL to 75,000/ uL). Cycle 2 was delayed. Repeat CBC continued to reveal delayed recovery: WBC 1,000/uL, ANC 0, Hgb 10.5 g/dL and platelets of 184,000/ uL. Chemotherapy was again delayed. Hematological toxicity from 5-FU was high on differential diagnosis. Test was sent to assess DPD deficiency. While awaiting mutation status, Cycle 2 began with 50% reduction of 5-FU to avoid disease progression. There was no delay in count recovery. Results confirmed heterozygosity of c.1905+1G>A (∗2A) variant in the DPYD gene (intermediate DPD activity (30–70% activity)). Delayed catabolism of 5-FU was the suspected cause for the cytopenias. 5-FU dose was increased at 30% reduction. Treatment resumed without further delay.

DPD is the first enzyme in the metabolism of the fluoropyrimidine pathway. Mutations occur in the DPYD gene, resulting in partial or complete deficiency of DPD and elevated 5-FU concentrations. Out of 128 mutations, four are known to significantly decrease DPD activity, including DPYD∗2A (as in this case), DPYD∗13, DPYD∗9B, and HapB3. Patients can present with severe diarrhea, mucositis, and pancytopenia. In America, high-risk variants (DPYD∗2A, ∗13, and ∗9B) are in fewer than 10% of patients. Risk of severe toxicity can vary. About 15–30% of cases are associated with severe 5-FU-related toxicities.

This rare entity can decrease catabolism of 5-FU and therefore increase risk of Grades 3 or 4 cytopenias. Testing for aberrancies in the DPYD gene may be warranted to assess for DPYD deficiency when index of suspicion is high.

A CASE OF B-CELL PROLYMPHOCYTIC LEUKEMIA—A RARE ENTITY

J Kim*, H Mhadgut, B Youssef, S Singal, K Chakraborty. East Tennessee State University, Johnson City, TN

Case Report A 64-year old male presented with a lymphocytosis and a total white blood cell count (WBC) of 41000/uL. (73% lymphocytes). Flow cytometry noted monoclonal kappa-restricted CD5 and CD23 positive B-cell population (95% of lymphocytes and 83% of total cells) consistent with Chronic Lymphocytic Leukemia (CLL). Hemoglobin and platelet count were 14 g/dL and 185000/uL, respectively. Computer tomography (CT) of the chest, abdomen and pelvis revealed splenomegaly (19 cm) without adenopathy. Rapid doubling of WBC up to 112,000/uL occurred over 6 months. Patient also complained of fatigue and weight loss. Repeat CT showed stable splenomegaly. Peripheral blood smear showed prolymphocytes with large nucleus, punctuated nucleoli and scant basophilic cytoplasm. Bone marrow biopsy noted B-Prolymphocytic cells involving >60% of marrow cellularity, CD5 positive but CD23 negative. IGVH was hypermuted. Cytogenetics was positive for t(2;8) translocation with MYC rearrangement and negative for del(17p)/TP53 mutation. B-cell prolymphocytic leukemia (B-PLL) was diagnosed. The patient was then started on ibrutinib. B-PLL consists of <1% of B-cell leukemias involving mature B lymphocytes. Features include B-symptoms, rapid spike in WBC (>100 K/uL) and splenomegaly without prominent lymphadenopathy. Diagnosis is made on bone marrow biopsy. Flow cytometry findings include light chain restriction and bright surface immunoglobulin. B-cell antigens CD5 and CD23 are weak/absent in most cases. At least 55% prolymphocytes in peripheral blood/bone marrow must be present for diagnosis. B-PLL is now considered a distinct entity from CLL which can also present with increased prolymphocytes but always less than 55%. Unfortunately, data is limited for well-defined treatment recommendations but parallels CLL treatment. Prognosis varies greatly. Poor outcomes are associated with aberrancies in MYC gene, del(17p)/TP53 mutations, moreso in those with both MYC and TP53.
abnormalities. This case emphasizes the importance of considering rare mature B cell neoplasms in the differential diagnosis when evaluating patients with rapidly worsening lymphocytosis.

Molecular subtype variation within metastasis of urothelial carcinoma

Purpose of Study Molecular subtyping of cancer based on gene expression is a new prognostic tool with potential to guide treatment in the future. Urothelial carcinoma is one such cancer for which numerous molecular subtyping systems have been developed, but the diversity of these systems has hindered their clinical application. Recently, a consensus classification system was derived from six independent systems, defining six molecular classes with distinct oncogenic mechanisms and mutations (Kamoun A, et al. 2020). Considering the high heterogeneity in urothelial carcinoma, we hypothesized that molecular subtype variation may occur between primary and metastatic samples. We further evaluated whether variation in subtype was associated with any unique patient characteristics.

Methods Used As part of the University of Washington Bladder Cancer Rapid Autopsy Program (BCRAP), primary and metastatic tumor tissue samples were acquired from 14 deceased patients with urothelial carcinoma within 6 hours of death. Patient history was collected and deidentified for analysis. RNA exome sequencing was used for assigning molecular subtype for each of the 61 tumor samples, using the consensus and six comprising systems.

Summary of Results Molecular subtype variation within metastatic tumors according to any classification system was detected in 8 out of 14 patients, independent of histologic morphologies. Amongst the patients with variation, on average 2.1 out of 7 classification systems identified a major difference in subtype between sites. Patients with variation (mean age 70 years (SD 7 years)) were older than those without variation (mean age 59 years (SD 11 years), P = 0.04). Furthermore, patients with variation tended to have decreased survival from diagnosis and received less chemotherapy, although these were not statistically significant (p > 0.05).

Conclusions Molecular subtype variation within metastasis is relatively common amongst BCRAP patients with urothelial carcinoma. Older patients are more likely to have variation, possibly due to a higher tumor mutation burden. Potential variation must be taken into account when considering prognosis and developing a recommended drug regimen specific to molecular subtypes.

The safety of epidural analgesia in pregnant women with von Willebrand disease type 1

Purpose of Study Studying the management of pregnant women with Von Willebrand disease (VWD), focusing on the safety measures of epidural analgesia and the rates of postpartum hemorrhage and other pregnancy related complications in this patient population.

Methods Used This is a retrospective chart review studying the management of Von Willebrand pregnant patients from 2008–2018.

Summary of Results We had a total of 8 patients. The Mean (M) and the standard deviation (SD) of different parameters during the 3rd trimester were: M of Von Willebrand Factor: Antigen (vWF:Ag) was 97.23, with (SD) of 54.83. The M of Von Willebrand Factor:Ristocetin Cofactor (vWF:RCo) was 68.38, with SD of 42.55. The M for Factor VIII was 132.76, with SD of 58.79.

The mean age at delivery was 30.37. The mean number of weeks of gestation at delivery was 38.62. The route of delivery was spontaneous vaginal (SVD) in 7 (87.5%), and cesarean section (CS) IN 1(12.5%).

All 8 patients (100%) received epidural analgesia, none of them had epidural related complications (0%). Humate P was used in 7 patients (87.5%), and nothing was used in one patient (12.5%). ΔHb (antepartum-postpartum) mean was 1.225. The level of vWF was >80 in 6 patients (75%) none of them had postpartum hemorrhage (PPH), and it was in the 20s for two patients (25%), both of them had PPH which was defined as >500 cc in SVD or >1000 cc in CS. Of the two PPH pregnancies, one was a SVD and the other was a CS. The one patient with CS had Preeclampsia with severe features (12.5%), she also was given tranexamic acid prior to delivery. Bleeding resolved with medical treatment and did not require any surgical intervention.

Conclusions In our study, patients were treated to higher peripartum target levels (100–150%) of vWF:Ag and FVIII than the current guidelines (>50%) . None experienced bleeding related to the epidural analgesia, suggesting that epidural analgesia might be safe in this population.

Larger prospective studies that include other testing of the hemostasis in these patients (i.e. platelet function analyzer-100 (PFA-100) levels) are needed to provide high level data on the feasibility and safety of epidural anesthesia in this patient population as well as the correlation between third trimester vWF:Ag and FVIII levels and the risk of developing PPH.

Sustained response to erythropoietin for anemia in chronic lymphoproliferative disorder of NK-cells: A case report

Background Large granular lymphocytic (LGL) leukemia is a rare lymphoproliferative disorder that involves the T-cell lineage in about 85% of cases and NK-cell lineage in 15%, with the latter known as Chronic Lymphoproliferative Disorder of NK-cells (CLPD-NK). Most patients with LGL leukemia tend to require immunosuppressants at some point of disease trajectory to address clinical symptomatology largely pertaining to cytopenias. The role of growth factor support, particularly that of erythropoietin, is largely unknown.

Case A 73 year-old male with a history of stage III diffuse large B cell lymphoma (DLBCL) treated with 6 cycles of Rituximab, Cyclophosphamide, Doxorubicin, Vincristine and

Abstracts
Dexamethasone (R-CHOP) in 2014 resulting in complete remission developed fatigue, anorexia, weight loss and dyspnea in January 2019. He was noted to have worsening cytopenia with a hemoglobin (Hb) of 5.7 g/dl and an absolute neutrophil count of 400/µl. A PET-CT scan to evaluate for DLBCL relapse was unrevealing. He underwent a bone marrow biopsy in June 2019 which showed an atypical NK-cell population occupying 25% of the bone marrow space most consistent with CLPD-NK. The patient was subsequently started on immunosuppressive therapy with Cyclophosphamide and weekly Dexamethasone in August 2019, resulting in clinical improvement, marginal increase in neutrophil count (500–1,000/µl) but remained transfusion-dependent for severe anemia. A follow-up bone marrow biopsy in January 2020 showed a persistent but improved involvement with the NK-cell population (9%). The patient was started on erythropoietin alpha (EPO) 40,000 U (units) in May 2020 which improved the Hb from 8 to 9.2 g/dl within 1 week. Treatment was continued for the following 3 weeks with weekly EPO 20,000 U with an increase in Hb to 12.9 g/dl. Given the remarkable response, the patient was kept off EPO for the following 4 months without a notable decrease in Hb. Strikingly, there was a concomitant improvement in neutropenia (1,400/µl) that was sustained following cessation of EPO therapy.

Conclusion Given anemia can be a prominent feature of LGL, this case suggests EPO therapy may provide a notable hematologic response in LGL patients in conjunction with immunosuppressive therapy.

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*Age parameter removed
cancer. Preoperative ASA class and Charlson co-morbidity scores were significantly worse in the older group. Postoperative atrial fibrillation and urinary retention development occurred more often in the older group. Postoperative Clavien-Dindo complication severity scores >3, perioperative mortality rates and lengths of stay were similar. Long-term age-adjusted survival was 55% at 5 years for the >70 group and 44% for the <70 group (NS).

Conclusions Patients >70 with locally advanced E or EGI cancer should be evaluated for optimal curative therapy including NACR and surgical resection. Although preoperative risk scoring and postoperative atrial arrhythmias are higher in the older group, short and long-term outcomes are not inferior in these patients.

### IMMUNIZATION STATUS OF SICKLE CELL ANEMIA PATIENTS IN NEW ORLEANS

**Purpose of Study** To investigate and study the status of immunizations among children with sickle cell disease in New Orleans, Louisiana.

**Summary of Results** 86.6% of children with sickle cell anemia were vaccinated against Hepatitis B, which is standardly the first vaccine to be administered to children. Of routine 2 month vaccinations, DTaP and Hib were administered to 97.1% and 94% of children with SS, respectively. After 2009, 98.8% of children received the pneumococcal 13-valent conjugate vaccine, but 53% of those expected to get the pneumococcal vaccine polyvalent did not receive it at 2 years. 56% who did missed the 5 year booster. Meningococcal vaccine was not given at all to 40% of this population. Compared to vaccination status in Michigan, similar results were observed, including in children that did not receive additional pneumococcal vaccination after the initial. This data reinforces the need for communication between providers, standardization of recommendations and better documentation/follow up.

**Conclusions** Sickle cell related deaths among African American children younger than 4 years old fell by 42% from 1999 to 2002. This decrease coincided with the introduction of the novel Pneumococcal vaccine. Discrepancies in recommendations for vaccinations for children with sickle cell anemia exist among various health care organizations. Differences were noted specifically depending on if general practitioners, pediatricians or sickle cell centers were administering the vaccines. This review of the New Orleans sickle cell patient population immunization status indicates the need for clear definition of an immunization schedule – specifically for the pneumococcal and meningococcal vaccines. Additionally, better documentation of vaccine administration will facilitate communication between providers. Increased education of pediatricians and other primary care providers, in addition to standardization of recommendations by different agencies, is also warranted, in order to continue to see the decrease in morbidity and mortality attributed to these vaccines.

### HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS SECONDARY TO SYSTEMIC LUPUS ERYTHEMATOSIS

**Case Report** Hemophagocytic lymphohistiocytosis (HLH) is a life threatening hyperinflammatory syndrome. The primary form is familial and mostly affects infants. The secondary form has been mostly associated with infections.

A 27-year-old female, known to have SLE, compliant with her medications (Prednisone, Hydroxychloroquine, and Mycophenolate), was transferred to our facility due to anemia and thrombocytopenia. Labs also revealed elevated liver enzymes and hypocomplementemia. Infectious workup, including HIV, HCV, HBV, CMV, and EBV, was negative. B12 and folate were normal. Direct coombs, anti-platelet and HIT antibodies were negative. Imaging revealed splenomegaly.

She received two doses of IVlg, without response, started on Methylprednisolone, and given supportive blood products. Despite that, her condition worsened with severe pancytopenia. Labs after three days revealed hyperferritinemia (24,000), hypertriglyceridemia, hypofibrinogenemia, and elevated Interleukin-2R (4,246). CT chest showed diffuse opacities concerning for diffuse alveolar hemorrhage (DAH). She was started on Cyclophosphamide, and as she met 5 out of 8 criteria of the HLH-2004 protocol, etoposide was initiated. However, patient’s condition deteriorated and died hours later due to severe adult respiratory distress syndrome secondary to DAH.

Acquired HLH is often a rapidly fatal disorder, due to an increased macrophagic activity with hemophagocytosis, causing cytopenia. High index of suspicion is required for early diagnosis and treatment. Management is mainly treatment of the underlying disease.

The diagnosis of HLH secondary to SLE is complicated as they share common features. But unlike SLE, HLH is characterized by hyperferritinemia, hypofibrinogenemia, and hypertriglyceridemia. Cytopenias are common manifestations of both diseases, which may result in delay in diagnosing. This case is more challenging due to the combined SLE flare and HLH. In HLH due to SLE, corticosteroids and immunosuppressive agents have been used including cyclophosphamide, IVlg, and etoposide with variable success.

This case illustrates a rare case of secondary HLH due to SLE and the high fatality, despite aggressive treatment.
cavernosa as well as bilateral inguinal lymphadenopathy. On examination, he was found to have a 2 cm left mid-distal firm calcified penile plaque. Cystoscopy confirmed a left ventral urethral mass in the distal penile urethra, and an occlusive urethral mass with papillary features in the proximal urethra. Pathology of the resected proximal urethral mass confirmed urethral adenocarcinoma, mucinous/enteric type with focal signet ring pattern. Biopsy of the distal lesion showed micronests of mucinous adenocarcinoma. Biopsy of the left inguinal mass confirmed poorly differentiated adenocarcinoma with focal signet ring cells. He was found to have two adenomatous polyps on colonoscopy. Staging scans did not reveal distant metastatic disease. He was offered surgical resection including penectomy, prostatectomy and urinary diversion followed by adjuvant chemotherapy. Before the patient proceeded with management, his course was complicated by multiple venous thrombotic events. There was also interval development of necrotizing enlargement of the urethral mass with associated left hemiscrotum cutaneous fistulization, along with new left inguinal, pelvic, and peri-aortic lymphadenopathy. Given this rapid progression, the patient was no longer a surgical candidate and was started on palliative concurrent chemo-radiation with cisplatin/5-fluorouracil. Ultimately, the patient pursued hospice care and his demise came roughly 4 months after his diagnosis.

**Discussion** Primary urethral carcinomas are fairly rare entities which are mostly comprised squamous cell or transitional cell types. Enteric type adenocarcinoma histology’s are exceedingly rare accounting for <5% of primary urethral carcinomas with scant case reports describing this disease. Due to the paucity of literature available on this subject there is little guidance on systemic therapies with most regimens stemming from extrapolations of other better studied malignancies. This case exemplifies previously reported aggressive nature of urethral adenocarcinomas.

**Case Report** We describe a 2-year-old patient with neurofibromatosis type-1 (NF-1) and a pelvic mass secondary to Triton tumor.

**Methods Used** Chart review.

**Summary of Results** A 2-year-old male with NF-1 presented with 4-week history of a pelvic mass. MRI revealed a large 9.2 × 6.9 × 7.9 cm heterogeneous, T2-hyperintense, enhancing pelvic mass. It involved the prostate and extended from the bladder base through the left obturator/sciatic foramen. Excisional biopsy revealed a variable cellular spindle cell neoplasm with abundant myxoid stroma. The histologic and immunohistochemical stains suggested rhabdomyosarcoma with features of embryonal type. Patient was started on standard rhabdomyosarcoma chemotherapy.

His tumor continued to grow through the biopsy site leading to surgical debulking. A partially encapsulated mass measuring 15 × 12.5 × 6.5 cm was removed with resection margin focally lacking capsule. Pathology was most consistent with a malignant peripheral nerve sheath tumor with heterologous rhabdomyoblastic differentiation, Malignant Triton Tumors (MTT). Current literature on MTT shows an improved survival among patients with tumors less than 10 cm, those with centrally located tumors and who received postoperative radiotherapy. Positive margin status, local recurrence and progression, metastasis and treatment at later stage are associated with poor outcomes. Patient received radiation (4500 cGy) for local control and underwent complete pelvic floor exenteration.

Patient is now doing well 4 years off-therapy with no evidence of recurrence.

**Conclusion** This case highlights the rare occurrence of pelvic MTT in childhood. It should be included in the differential diagnosis, especially with underlying NF-1.

**Abstract**

**Abstract 369 Figure 1**

SUCCESSFUL TREATMENT OF TRITON TUMOR IN PEDIATRIC PATIENT WITH NEUROFIBROMATOSIS

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**Case Report** A 62-year-old female with a history of ICVO and remote provoked DVT following Caesarean section 40 years ago presented with new-onset left leg swelling and discomfort. She did not report trauma, insect bite or recent immobility. Vital signs were stable and labs were unremarkable. Imaging showed an extensive left-sided proximal DVT involving the internal iliac veins with chronic occlusion of infrafereral inferior vena cava (IVC). Therapeutic anticoagulation was promptly initiated. Patient underwent catheter-directed thrombolysis and mechanical thrombectomy with improvement in symptoms. She was discharged on oral anticoagulation. On 2-week follow-up, patient’s symptoms had markedly subsided.

**ICVO** is under recognized and may have thromboembolic complications in the settings of hypercoagulability, extrinsic compression from an adjacent tumor or an occlusion of an IVC filter. Presentation is variable ranging from an incidental radiographic finding to nonspecific abdominopelvic pain, leg
pain, swelling or heaviness. Patients with thrombus may also present with dyspnea from pulmonary embolism or oliguria from extension into the renal veins.

ICVO accompanied by an acute DVT is uncommon with a reported incidence of 4–15%. Venous duplex ultrasound is a cost-effective, initial imaging study. Magnetic resonance venogram is more sensitive for determining the extent of occlusion and relevant structural abnormalities. The mainstay of treatment is anticoagulation. Acute (<14 days) and subacute (15 to 28 days) presentations not at high risk for bleeding may benefit from catheter-directed thrombolysis and/or thrombectomy. Chronic (>28 days) presentations may benefit more from angioplasty with stenting. Untreated ICVO may result in pulmonary emboli, renal infarcts or phlegmasia cerulea dolens. It is therefore important to include ICVO as part of the differential diagnosis in patients who present with an unexpected and extensive proximal DVT.

**371 IMPACT OF UPDATED 2013 HUMAN EPIDERMAL GROWTH FACTOR RECEPTOR-2 TESTING GUIDELINES ON HER2 POSITIVE INVASIVE BREAST CANCER DIAGNOSIS – A THREE YEAR RETROSPECTIVE STUDY**

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**Purpose of Study** Breast cancer is a frequently diagnosed malignancy with approximately 266,000 cases and 40,000 deaths annually. Human epidermal growth factor receptor 2 (HER-2) is a surface protein shown to affect cell proliferation, migration and survival - hallmarks of neoplasms. HER2 is overexpressed in 20–35% of breast cancer with strong prognostic and therapeutic significance. In 2013, College of American Pathologist (CAP) updated their recommendations for HER2 testing by incorporating immunohistochemistry (IHC) and In situ hybridization (ISH). The primary objective of our study was to assess for variance in HER2 interpretation by applying the new criteria.

**Methods Used** We retrospectively reviewed charts from January 1, 2010 to December 31, 2012. We obtained the ISH HER2 copy number and HER2/CEP ratio and applied the new CAP criteria and compared it to the old to assess for variance. Categorical variables were presented as percentages and kappa statistic was used to assess for variance.

**Summary of Results** We reviewed 526 patients over a 3-year period. 10.8% of patients were HER2 amplified, 86.1% non-amplified and 3.04% - equivocal. Applying the updated 2013 CAP criteria, 11.2% were amplified, 74.3% - non amplified, 14.4% - equivocal. Kappa statistic indicated substantial agreement (0.804) between the two.

Our cohort had lower HER 2 positive cases at 11.21% with the new criteria when compared to other studies. An increase in equivocal cases from 3.04% to 14.44% would suggest underreporting of the amplified cases. Due to the lack of IHC, we were unable to classify the equivocal cases based on new criteria. While we saw movement in data from non-amplified to equivocal, our analysis indicated substantial agreement between the two criteria.

**Conclusions** Our study did not show a variance in HER 2 interpretation between the 2007 and 2013 CAP criteria however did reveal a trend with increase by 11.4% cases in the equivocal category which upon further classification could reveal a significant difference. This variance is of utmost importance given the prognostic and therapeutic implications in HER2 positive breast cancer.
Introduction Monoclonal gammopathy of undetermined significance (MGUS) is a relatively common finding that can be indicative of conditions such as multiple myeloma and amyloidosis and is often benign for years. Transitions into both amyloidosis and multiple myeloma have been seen, but few trials have elucidated treatments for these diseases prior to autologous stem cell transplant.

Case Report In 2015, a 68-year-old male developed telangiectasia macularis eruptiva (TME). Bone marrow biopsy revealed mastocytosis <1% and monoclonal plasmacytosis 8%. He maintained close laboratory and skeletal surveillance. In 2019, he had a stable M spike and elevation of lambda light chains with a small kappa/lambda ratio, but later in the same year, he developed a first-degree anterolateral mass with a right bundle branch block, mediastinal lymphadenopathy, lytic lesions, and pleural effusion. Adenopathy was reactive and a right rib biopsy confirmed AL (lambda) type amyloidosis and plasmacytoma. Repeat bone marrow biopsy showed mast cells <5%, monoclonal plasmacytosis 10–15%, and chromosomal translocation 11 to 14. The stomach and colon were involved by amyloid. A cardiac MRI showed biventricular amyloid deposition consistent with cardiac amyloidosis. He received 4 cycles of cyclophosphamide, bortezomib, and dexamethasone but M-spike and lambda light chains were significantly elevated. He was switched to 4 cycles of daratumumab, pomalidomide, and dexamethasone to achieve disappearance of the M-spike, normalization of light chains, and a decrease in pro-brain natriuretic peptide. He concluded therapy by receiving an autologous stem cell transplant.

Discussion This case report serves as a reminder that rare skin findings such as TME can be seen with systemic mastocytosis with associated clonal hematological non-mast cell lineage disease such as MGUS. Such findings can indicate much more severe diseases and deserve workups.

Conclusion MGUS with abnormal cutaneous findings may develop into systemic amyloidosis or multiple myeloma or both. Treatment options exist that may improve the long-term prognosis of this disease.

374 SYMPTOMATIC OVARIAN STEROID CELL TUMOR, NOT OTHERWISE SPECIFIED IN A PRE-MENOPAUSAL WOMAN

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Case Report Hirsutism and infertility in premenopausal females are often attributed to polycystic ovarian syndrome (PCOS). However, it is important to acknowledge that severe cases of hirsutism can be caused by ovarian tumors and their evaluation should not be delayed. We present a 29-year-old female with severe male pattern facial hair and infertility previously attributed to PCOS. On evaluation, she had significant elevation in testosterone (973 NG/dL (normal <75 NG/dL)) and DHEA-S (529 ug/dL (normal 65–380 ug/dL)). On imaging, she was found to have seven cm multilobular left ovarian lesion. She underwent fertility sparing unilateral salpingo-oophorectomy with final pathology revealing diagnosis of steroid tumor, not otherwise specified (NOS). Post operatively, histologic evaluation showed features concerning for malignant behavior and the patient underwent one cycle of chemotherapy with bleomycin, etoposide, and cisplatin (BEP). BEP treatment was discontinued due to side effect of ototoxicity, and she subsequently underwent two cycles of carboplatin and paclitaxel. Normalization of testosterone levels were seen one month after surgery, with resumption of normal menstrual cycles after three months. Her hirsutism was still present after initial treatment, but she reported subjective improvement with spironolactone. Her short course chemotherapy, young age at treatment and her resumption of regular menses are promising. The patient has not yet attained pregnancy but, for social reasons, has delayed trying. In conclusion, steroid tumor NOS is a rare sex cord stromal tumor that can be a cause of hirsutism and infertility in premenopausal women. One third of these tumors are malignant, and thus the workup of a patient with significant hirsutism should be initiated to evaluate for these rare tumors.

375 MALIGNANT SPINDLE CELL OF THE BREAST: A RARE AND CHALLENGING DIAGNOSIS

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Introduction Malignant spindle cell of the breast is rare (estimated 0.3% of all breast malignancy) and can be difficult to diagnose due to heterogeneity of pathology at presentation, and even more challenging in underserved communities. Here we presented a case of rapidly growing breast mass that were benign on initial biopsy and eventually diagnosed as malignant spindle cell.

Case presentation 65 year old African American female presented with a fungating mass on the R breast that has grown rapidly for 6 months along with 30 lbs weight loss. Prior to this presentation, she had a diagnostic mammogram and a biopsy at that time suggested epidermal inclusion cyst and negative for atypia, thus a follow up in 1 year was recommended. Her past medical history includes asthma, schizophrenia, and peptic ulcer disease. Physical exam confirmed a fungating mass with purulent discharge. A CT scan of her chest revealed a mass 8.2 × 9.0 × 9.4 cm, which was larger in size compared to previous imaging and appeared to invade directly into the chest wall with axillary adenopathy. CA15-3 and CA27.29 were within normal limit. Repeat biopsy revealed malignant spindle cell neoplasm with focal necrotic tissue with negative ER, PR, and HER2.

Discussion Spindle cell lesion of the breast is rare, comprises a heterogenous group of benign reactive lesions to high grade malignant with pleomorphism, thus making the diagnosis of malignancy from a core needle biopsy especially challenging. Malignant spindle cell of the breast is so rare that it usually requires interdepartmental review to confirm the diagnosis. It is a very aggressive form of breast cancer and overall prognosis is poor compared to the common invasive mammary carcinoma. Treatment options are limited due to rarity of the tumor.
LKB1 SIGNALING IN TRIPLE NEGATIVE BREAST

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Purpose of Study Cancer Disparities.

Methods Used Basic Science.

Summary of Results Breast cancer (BC) is the most common malignancy diagnosed in US women and is the second leading cause, lung cancer being first, of death for women globally. Triple Negative Breast Cancer (TNBC) is a more aggressive subtype of BC that is categorized by negative expression of ER, PR, and amplification of HER2/neu. Because of its phenotype, traditional hormone therapy fails to produce significant short- or long-term benefits for patients. Additionally, chemotherapeutic and surgical interventions often result in relapse and development of a more aggressive disease. TNBC also tends to affect women younger than 40 as well as black women, making it a disease of disparities.

The Liver Kinase B1 (LKB1/STK11) pathway has shown to have a role in cellular energy homeostasis, metabolism, as well as tumor suppressive capabilities. It functions as a master regulator through a set of 14 kinase targets to maintain its role in cell-type specific regulation. Peutz Jeghers Syndrome, a genetic disorder with a predisposition to developing malignancies, and many other solid tumor cancers are associated with a loss LKB1 activity. Its role and mechanism in the regulation of TNBC remains unknown.

The hypothesis is LKB1 activity in TNBC cell lines will inhibit cancer function. To test this, TNBC cell lines were transfected to overexpress LKB1 (OE). Initial results demonstrate a reversal of EMT gene expression by qPCR in OE cells. Flow cytometry analysis show a decrease in the GD2+ cancer stem-like subpopulation. Additionally, functional assays show a reduction growth and proliferation in 3D culture systems. Interestingly, there was no effect on proliferation in 2D culture conditions.

Conclusions Survival curves from KMPlotter correlated increased levels of NUAK2, PAK1, SIK2, and QSK to improved patient survival. Altogether, these sets of data suggest a tumor suppressor role for LKB1 signaling with downstream mediators being NUAK2, PAK1, SIK2, and/or QSK. Future investigations will be performed to validate the specific kinases as well as identify downstream signaling pathways.

FOSPHENYTOIN & RED BLOOD CELL EXCHANGE FOR SUPRATHERAPEUTIC TACROLIMUS LEVELS IN A PEDIATRIC BONE MARROW TRANSPLANT PATIENT

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Purpose of Study Triple-negative breast cancer (TNBC) represents approximately 15% of all newly diagnosed breast cancer and commonly has an aggressive natural course. It is more common among younger premenopausal African-American (AA) and Hispanic-Latino (HL) women. Also, AA and HL have a higher mortality rate and a more aggressive course compared to non-Hispanic white women (NHW). The molecular biology of TNBC in HL is poorly characterized. Recent data suggest that molecular drivers of TNBC might be different in various racial/ethnic groups, and a better understanding

Case Report Our patient was diagnosed at 4 months of age with familial Hemophagocytic Lymphohistiocytosis. At 9 months she received a haploidentical BMT with GVHD prophylaxis including Tacrolimus, and was discharged on day +35. On Day +61, she was admitted after presenting with fever. Tacrolimus level was slightly low at 4.3 ng/mL leading to an increase from 1.2 mg BID to 1.4 mg BID. Voriconazole was added due to persistent fevers and new lung nodules. On day +64, she transferred to the PICU in septic shock and her Tacrolimus dose was further increased to 2 mg BID. Repeat level was greater than 90 ng/mL. Fosphenytoin was added on day +67 to aid in clearance as holding Tacrolimus only slightly decreased the level. Levels initially improved, but then plateaued. Three red blood cell (RBC) exchanges further helped to lower her Tacrolimus level to 5 ng/mL (figure 1).

Discussion Voriconazole is an antifungal used in some BMT infections and is metabolized by a CYP450 enzyme, which Tacrolimus also utilizes, yielding to potential supratherapeutic levels and toxicity. Fosphenytoin is a strong CYP450 enzyme inducer, and was successfully used to decrease Tacrolimus levels and improve toxicity. A RBC exchange can be helpful in eliminating Tacrolimus as it is strongly bound to RBCs. While Tacrolimus should be monitored and adjusted carefully, Fosphenytoin and/or RBC exchange can be used to decrease toxicity.

THE ASSOCIATION BETWEEN GENE MUTATION PROFILE AND CLINICAL OUTCOMES AMONG HISPANIC-LATINO WOMEN WITH METASTATIC TRIPLE-NEGATIVE BREAST CANCER

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Purpose of Study Triple-negative breast cancer (TNBC) represents approximately 15% of all newly diagnosed breast cancer and commonly has an aggressive natural course. It is more common among younger premenopausal African-American (AA) and Hispanic-Latino (HL) women. Also, AA and HL have a higher mortality rate and a more aggressive course compared to non-Hispanic white women (NHW). The molecular biology of TNBC in HL is poorly characterized. Recent data suggest that molecular drivers of TNBC might be different in various racial/ethnic groups, and a better understanding...
of these may help address some of the disparities seen in outcomes.

The aim of the study was to characterize individual patient gene mutation profiles in HL women with mTNBC and to identify the association between the individual mutation profile and clinical outcomes.

**Methods Used** We retrospectively analyzed gene mutation profiles of women with TNBC and correlated with individual clinical history and outcomes.

**Summary of Results** Of 30 patients with TNBC, 29 (96%) identified as HL, 1 (4%) as non-Hispanic whites. 28 (93%) had stage IV disease, and 2 (7%) had stage IIIc/IV. The most commonly mutated genes were: TP53 (100%), Notch (44%), AKT (28%), and MEF3K (28%). In contrast, data from larger international databases from Europe, Asia, and USA showed a significantly lower frequency of those mutation: TP53, Notch, AKT, and MEF3K. Our study demonstrated that a worse clinical outcomes was correlated with mutations in the Notch and PIK3CA pathways.

**Conclusions** In conclusion, this study is the first to identify the most common genetic alterations among HL women with metastatic triple-negative breast cancer. Compared to international breast cancer databases we demonstrated statistically significant higher frequencies of mutation in TP53, Notch, AKT, and MEF3K. Our data support the motion that molecular drivers of breast cancer is different in HL women, and therefore, a better understanding of these mutations may help address some of the disparities seen in outcomes in this group of patients.

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**379 SALVAGE POST-PROSTATECTOMY RADIOTHERAPY WITH ILEAL POUCH SPARING**

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**Introduction** In select cases of recurrent prostate cancer after prostatectomy, early salvage radiation can induce a durable remission. Salvage radiation is usually delivered to an anatomically-defined field, rather than based on individual recurrence. After ileal pouch-anal anastomosis (IPAA), there may be an increased risk with pelvic radiotherapy. Ileal pouch radiation tolerance is unknown, and literature is limited in this population.

Case A 76-year-old man with a history of ulcerative colitis treated with total abdominal colectomy and S-type IPAA underwent prostatectomy for clinically high risk prostate cancer that revealed pT2cN0 Gleason 7 (4+3) disease with perineural invasion. An excellent surgical result was achieved with negative margins and maintenance of urinary continence, sexual function, and baseline gastrointestinal function. His PSA nadir was undetectable. About 3 years later, biochemical recurrence occurred with a PSA of 0.96 and doubling time of 6 months. A bone scan was negative, an MRI prostate showed 1.1 cm of enhancement posterior to the vesico-urethral anastomosis. An MRI-guided radiotherapy plan was developed to target gross disease while sparing the ileal pouch. The clinical target volume (CTV) included the anastomosis and enhancing gross tumor with a 5 mm expansion. 70.2 Gy to 95% of the CTV was delivered by volumetric-modulated arc technique and two 300-degree rotational arcs. The pouch was contoured 2.5 cm above the planning target volume to the ischial tuberosities. It received a mean dose of 8.47 Gy, maximum of 51.8 Gy, V5Gy of 6.8 mL, V10Gy of 4.1 mL, V15Gy of 0.3 mL, and V20Gy of 0.04 mL. 6 months of concurrent ADT was given. At follow up 28 months post treatment, there was no evidence of toxicity. The PSA was initially undetectable and is now stable at 0.1 ng/mL for about a year.

**Discussion** We demonstrate successful and safe personalized salvage prostate bed irradiation with ileal pouch sparing. It is reasonable to explore tailoring the anatomic consensus boundaries in order to help mitigate toxicity associated with ileal pouch radiation.

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**380 A RARE CASE OF MIXED PHENOTYPIC ACUTE LEUKEMIA**

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**Introduction** Mixed phenotypic acute leukemia (MPAL) comprises of both lymphoid and myeloid markers or blasts in a single population. Diagnosis consists of identifying markers that suggest a precursor progenitor cell which could develop into either of these hematopoietic lineages. MPAL accounts for 2% of all acute leukemias & outcomes are poor due to complex karyotypes and lack of an appropriate treatment strategy.

Case A 57-year-old female presented complaining of generalized weakness & easy bruising. Bone marrow biopsy showed hypercellular marrow with 60% CD 34+ myeloblasts confirming AML. Markers were positive for CD8, CD5, & CD4. CD1a antigens were not tested. Patient presented 8 weeks later with shortness of breath, fatigue & thrombocytopenia. Cytogenetics were repeated and were consistent with AML, with markers positive for the CD64 antigen. A week later, restaging bone marrow biopsy showed 85% blasts CD34+, & cytogenetics now identified Early T cell precursor ALL (ETP-ALL) and pluripotent cells. This time, CD1a & CD8 were negative with CD4+, CD 34+ and cCD3+ and CD5 was weak positive (3%). This new profile fit the cytogenetic profile of ETP-ALL. Patient was treated with Hyper CVAD (cyclophosphamide, vincristine, Adriamycin, and dexamethasone) & Venetoclax, complicated by persistent neutropenia with E. coli sepsis, & unfortunately died.

**Discussion** ETP-ALLs are characterized by a very early differentiation arrest and show unique genetic features that overlap both with ETP-ALL and AML. Mutations common in AML like FLT3 and IDH1/IDH2 have been described in ETP-ALL.

This patient was positive for CD64 confirming a myeloid lineage and cCD3 representing the T lineage. CD19 was negative. However, the presence of the CD3 marker suggests that this was MPAL since this is the genetic marker for the hematopoietic stem cell precursor before differentiation into myeloid or lymphoid lineages. This could explain the transformation from AML to ETP-ALL once the AML was treated.

**Conclusion** This case highlights a pluripotent progenitor origin for MPAL. After the therapy of AML, the cytogenetic reports
EXTRAMEDULLARY PLASMACYTOMA OF THE BREAST: AN UNCOMMON MANIFESTATION


Case Report

Extramedullary plasmacytomas (EMP) can occur as an isolated tumor or a manifestation of a Multiple Myeloma (MM) in any part of the body, the most common site being the upper respiratory tract. Rarely, EMP can develop in the breast. The clinical diagnosis of EMP of the breast can be very difficult, given it can be confused with lesions of the breast such as adenocarcinoma or fibroadenomas.

A 39-year-old woman presented with a pathological left iliac bone fracture after a fall. Plasma protein electrophoresis, liver function test, renal function test and electrolytes were normal, however, a bone biopsy revealed a solitary plasmacytoma which demonstrated 10% plasma cells. Flow cytometry was consistent for a 0.03% kappa monoclonal cells. PET/CT scan revealed a large FDG avid lytic lesion at left iliac bone. She was treated with local radiation which improved her hip lesion. Four months after radiation, she developed bilateral breast masses. A mammography revealed a 1.6 × 1.5 cm rough dense cystic lesion with few internal echoes in the right breast and a 1.5 × 1.1 cm cyst with few internal echoes on the left breast. An excisional biopsy of the lesions revealed extramedullary plasmacytoma. Treatment was initiated with Bortezomib, Dexamethasone and Lenalidomide (RVD). After three cycles of RVD no palpable masses were identified during a physical examination. No solid or cystic masses were found in breast ultrasound. She underwent autologous bone marrow transplant and is currently on remission.

EMP of the breast is successfully treated with excisional biopsy and radiation therapy with or without chemotherapy. Patients should be followed closely since 30%-50% of them may progress to multiple myeloma. High clinical suspicion is important in the diagnosis of EMP of the breast because this condition does not have a unique clinical or imaging presentation to aid in diagnosis. If not identified, it can evolve into multiple myeloma, a more progressive and systematic disease that can lead to organ damage and death. A proper diagnosis and a suitable treatment can be critical when evaluating a patient with this clinical presentation to avoid unnecessary delays and procedures that can harm the health of the individual.

383 BREAST CANCER IN PREGNANCY: A CALL FOR MULTIDISCIPLINARY MANAGEMENT

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Case Report

Purpose

Increase awareness of diagnostic challenges and management of breast cancer (BC) during pregnancy.

Methods

Review Electronic Health Records and literature review.

A 34-year-old presented for a routine obstetrical visit at 27 weeks gestation with complaints of right breast erythema, pruritis and pain. She had no significant medical or family history and an uncomplicated obstetrical course. She underwent a diagnostic mammogram and ultrasound (US) that showed a right spiculated hypoechoic mass and enlarged axillary nodes. An US guided breast biopsy confirmed Grade 3 invasive ductal carcinoma with metastatic disease to the axillary node. The tumor profile was ER/PR negative and HER-2 positive. Genetic testing did not show any deleterious germline mutations. After a discussion with the maternal fetal medicine and oncology teams, she was induced at 39 weeks gestation and delivered a healthy girl. She had an uncomplicated postpartum course and subsequently underwent chemotherapy with death-L1 monotherapy have been reported to be 5% for all-grade toxicity and close to 1% for high-grade pneumonitis. The median time-to-pneumonitis onset from start of treatment is 2.5 months.

A 76-year-old man presented at the emergency department with spinal cord compression. Thoracic and lumbar MRI revealed extensive destruction of the posterior elements of T7 with tumor infiltration of the posterior epidural fat and epidural space causing compression of the thoracic cords. There was also metastatic disease to T7 and T12 vertebrae. A chest CT scan revealed a 4.3 cm mass in the left upper lobe. Biopsies of the mass and vertebrae were consistent with squamous cell lung cancer. Considering that the patient had a poor performance status, he was not a candidate for chemotherapy. Instead, the patient underwent radiotherapy to the vertebrae and was then transferred to the hematology and oncology ward to begin immunotherapy with Pembrolizumab. Two days after immunotherapy, the patient developed altered mental status, respiratory distress, tachycardia, hypoxemia and bilateral crackles. Chest CT scan revealed bilateral diffuse interstitial lung disease. He was initiated on antibiotic therapy, steroids at 1 mg/kg/day and high flow nasal cannula. Significant improvement of hypoxemia and mental status was observed after initiating steroid therapy. Despite improvement, the patient refused to be intubated if needed and to continue high flow nasal cannula. Given his decision, high flow nasal cannula was deescalated to normal nasal cannula, respiratory deterioration ensued, and he unfortunately expired amid prolonged hypoxemia. This case demonstrates that immunotherapy related life-threatening pneumonitis, although rare, can be seen on an early stage with Pembrolizumab monotherapy treatment. Furthermore, steroid therapy and proper oxygen therapy should be started promptly in patients with the clinical picture of pneumonitis considering that this is a serious and life-threatening event.
ROLE OF EXCHANGE TRANSFUSION IN A PEDIATRIC PATIENT WITH SICKLE CELL DISEASE, ACUTE CHEST SYNDROME AND COVID-19

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10.1136/jim-2021-SRMC.384

Case Report The majority of COVID-19 cases have been reported in the adult population with rapidly evolving management guidelines. Limited data exist about the role of exchange transfusion in the management of COVID-19 complications in children with sickle cell disease. We present a female with HbSC disease admitted for acute chest syndrome (ACS) complicated by COVID-19, who demonstrated notable improvement with early anticoagulation therapy and partial manual exchange transfusion.

A 12 year old African American female with a history of well-controlled sickle cell HbSC disease, who presented with signs of vaso-occlusive crisis, ACS with a left lower lobe infiltrate tested positive for COVID-19. Early during admission, she acutely decompensated with increased oxygen requirement and worsening respiratory distress despite aggressive antibiotic management and routine care. Laboratory findings were significant for mildly prolonged PTT and PT, elevated fibrinogen and D-dimer, elevated triglyceride level, IL-6 and ferritin levels. Cardiac enzymes, Cystatin C, Procalcitonin were normal. EKG revealed normal sinus rhythm, with trace tricuspid regurgitation on echocardiogram. She met both clinical and laboratory criteria for multisystem inflammatory syndrome in children (MIS-C) and was transferred to the pediatric intensive care unit where she was managed with supplemental oxygen and low molecular weight heparin for DVT prophylaxis. Her respiratory status continued to deteriorate but family declined remdesivir. We then proceeded with exchange transfusion. Pre and post exchange HbS% was 42.3% and 30.8% respectively. She had a significant improvement within 12–24 hours of the transfusion. She was weaned to room air 3 days after exchange transfusion and ultimately discharged on oral antibiotics with no complications and full recovery upon follow up.

The data on COVID-19 infection in children with sickle cell disease are sparse, and even more limited among patients with hemoglobin SC genotype and concurrent ACS. In our patient with COVID-19, exchange transfusion improved her clinical course. Early exchange transfusion should be considered in COVID-19 positive patients presenting with ACS to prevent further clinical deterioration and hasten recovery.

EPSTEIN BARR VIRUS POSITIVE GASTRIC MALT LYMPHOMA IN AN IMMUNOCOMPROMISED NON TRANSPLANT PATIENT

A Rojas Figueroa*. San Juan City Hospital, San Juan, Puerto Rico
10.1136/jim-2021-SRMC.385

Case Report Primary gastric lymphoma is one of the most common extranodal sites of Non Hodgkin lymphoma representing 30% to 40% of all extranodal lymphomas. Marginal zone B-cell lymphoma of the mucosa-associated lymphoid tissue is the least common histological subtype of PGL. Its development is strongly associated with chronic H. Pylori infection. Recent studies identified the presence of EBV in a few samples of extranodal MZL but these were almost exclusively found in the post-transplant setting. This is an unusual case in which EBV+ Gastric MZL-MALT evolved in an immunocompromised non-transplanted patient. A 53 year old female patient with a PMHx of HIV presented to the ER complaining of intermittent epigastric abdominal pain of three months of evolution. One week before visiting the hospital, pain became constant, burning, 6/10 intensity, aggravated by food ingestion with no alleviating factors it was associated with non-bloody emesis, anorexia, and 10 pound weight loss in 3 months. Laboratories showed pancytopenia. Peripherial smear with basophilic stippling present, schistocytes lesion and occasional burr cells. Upper endoscopy and biopsy from upper stomach showed the presence of EBV associated gastric lymphoepithelial lesions. These EBV+ lymphoepithelial lesions consisted of prominent infiltrates of B and T lymphocytes with occasional large cells. Immunohistochemistry showed CD3 +, CD5+, CD20+,CD79a+, CD30+, Kappa and Lambda +. It is important to mention that this type of lymphoepithelial lesions are more common in immunocompetent men than in women patients. The association of EBV with gastric carcinoma was reported only for a few cases of lymphoepithelial-like gastric carcinoma, but the mechanism used by the virus to determine the oncogenesis is still unknown. It seems that EBV deregulation of the expression of immune response-related genes promotes marked intra or peritumoral immune cell infiltration. This report provides further evidence to support the inclusion of EBV-associated nodal marginal zone lymphoma as a form of gastric cancer as a logical consideration given the extensive histologic and immunophenotypic overlap between marginal zone lymphoma of extranodal and nodal types.

TREATMENT STRATEGIES, OUTCOMES OF PATIENTS WITH PERIPHERAL T-CELL LYMPHOMA

A Roy*, R Parkhi, Y Pandey, N Vafargadda, A Sasupu. University of Arkansas for Medical Sciences, Little Rock, AR
10.1136/jim-2021-SRMC.386

Purpose of Study Peripheral T cell lymphoma (PTCL) is an uncommon and aggressive type of non-Hodgkin lymphoma...
A RARE CASE OF MULTIPLE MYELOMA CAMOUFLAGED IN ANASARCA

1NR us *, 2MF Habib, 1HY o us u sf, 1T Naguib.

Case Report Multiple Myeloma (MM) is a rare malignancy accounting for 1 to 2% of all cancers and 17% of hematologic malignancies, being more common in African American males. Diagnosis could be missed, especially when serologic picture is not conclusive.

We report a case of a 79 y/o male admitted for worsening lower extremities edema and increasing abdominal girth. He was suspected to have nephrotic syndrome by his primary care physician. On examination, the patient had +3 pitting edema and shifting dullness. Labs were significant for elevated creatinine, BUN, alkaline phosphatase, 24-hour proteinuria of 4.2 grams, and hypoalbuminemia. CT chest/abdomen/pelvis revealed anasarca with hepatomegaly. Paracentesis showed low serum ascites albumin gradient (SAAG). Workup for hepatic and cardiac etiologies for anasarca was negative.

Due to nephrotic syndrome kidney biopsy was performed which showed AL amyloid with lambda light chain deposits. Serum electrophoresis with immunofixation did not show an M spike and Ig levels were normal. Both kappa and lambda light chains were significantly high but the kappa/lambda ratio was normal. Peripheral blood smear showed neutrophilia, with hyper segmented neutrophils. Due to high suspicion for multiple myeloma (MM), a bone marrow aspirate and biopsy were done and confirmed the diagnosis of MM, revealing 40% monoclonal plasma cells with kappa light chain restriction.

Our patient had light chain myeloma which accounts for 20% of MM. Renal failure is significantly more frequent in light chain MM and is often the initial presentation. Our case also highlights a rare case of anasarca caused by AL amyloid and light chain deposit nephrotic syndrome confounding the MM diagnosis which was obtained only after the bone marrow biopsy even when other markers were non-conclusive.

Physicians should be aware of myeloma as an unusual underlying etiology for volume overload.

388 TYPICAL CASE OF LI-FRAUMENI SYNDROME? NOT EVERYTHING IS AS IT SEEMS

1L Saunee*, 2A Garcia, 1R Irinker. 1Louisiana State University Health Sciences Center, New Orleans, LA; 2Louisiana State University Health Sciences Center, Metairie, LA

Case Report Increase awareness of incidence of primary adrenal melanoma

Methods Review of Electronic Health Records and literature review

Results A 60-year-old female presented with incidental left adrenal mass during routine surveillance CT for a lung nodule. MRI showed an 11.2 × 9.2 × 9.9 cm adrenal tumor. The patient had a history of undifferentiated pleomorphic sarcoma in the left upper extremity. Family history revealed breast cancer (BC) <40 years of age in mother, sister, and grandmother. Li Fraumeni Syndrome, an inherited predisposition to cancers including soft-tissue sarcomas, BC, and adrenocortical carcinoma (ACC), was suspected. TP53 sequencing was negative. Patient underwent resection of the adrenal mass. Pathology showed pleomorphic epithelioid cells with eosinophilic cytoplasm, necrosis, and diffuse expression of Melan-A consistent with ACC. Follow-up CT revealed intra- and retroperitoneal nodules; biopsy results were consistent with metastasis of primary mass. Gene profiling showed expression of PD-L1 and tumor-infiltrating CD8+ T cells, both associated with melanoma. This prompted additional immunohistochemical evaluation and revision of diagnosis to primary adrenal melanoma. Dermatologic examination did not identify cutaneous melanoma. Patient completed a 2-year course of immunotherapy with marked partial response and substantial symptom improvement.

Melanoma commonly metastasizes to the adrenals, but primary adrenal melanoma is rare. The 14 previously reported cases had inconsistent clinical presentation. Hormonal workup
was often normal, as in this case. Diagnosis is often complicated by overlapping morphologic and immunohistochemical features with other tumors. Non-cutaneous melanomas are often not apparent on physical exam. They often present as advanced disease and prognosis is poor. Treatment with chemotherapy or immunotherapy is tailored towards specific tumor characteristics.

**Conclusions** This case highlights the challenging nature of diagnosis of primary adrenal melanoma. In the two years since diagnosis, our patient has responded well to immunotherapy. This may be particularly valuable given the rarity of this diagnosis and limited data available to guide clinical management.

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**389 ACUTE OPTIC PERINEURITIS DUE TO CHRONIC LYMPHOCYTIC LEUKEMIA**

1) Schaube,* 1) Allee. 1) University of Mississippi Medical Center, Clinton, MS; 2) G.V. (Sonny) Montgomery VA Medical Center, Jackson, MS

10.1136/jim-2021-SRMC.389

**Introduction** Chronic lymphocytic leukemia (CLL) is the most commonly encountered leukemia in both inpatient and outpatient adult medicine. Central nervous system (CNS) involvement is an especially rare manifestation of progression of CLL. Here we present an extremely unique case of early stage CLL presenting with first evidence of progression as perineuritis.

**Case Description** A 58-year old African American male with early stage CLL presented to the Veterans Affairs Medical Center for progressive loss of vision in his left eye. He denied remainder of pertinent review of systems including lymphadenopathy, weight changes, weakness, or sensation changes. He underwent magnetic resonance imaging (MRI) of the brain which revealed diffuse enlargement and abnormal enhancement involving and surrounding the left optic nerve consistent with acute optic perineuritis. Lumbar puncture was performed and cerebrospinal fluid (CSF) flow cytometry resulted in a CD5+ monotypic B-cell population consistent with CLL involvement. Further imaging was negative for systemic CLL disease. His vision improved with high dose steroids and low-dose ibritinib for systemic control, with intrathecal therapy planned on an outpatient basis.

**Discussion** CLL presenting with CNS involvement is a rare manifestation of the disease. It can present heterogeneously ranging from seizures, encephalopathy, cranial neuropathies, ataxia, headache, and optic neuritis. Optic perineuritis is an inflammatory demyelinating disease which specifically targets the optic nerve sheath which can result in eye pain and loss of vision. Optic perineuritis can be idiopathic in nature or secondary to other systemic disorders such as infection, autoimmune diseases, and malignancy. The mechanism of CNS involvement is not fully understood, but may be the only sign of progression of CLL and warrants systemic treatment (1).

**Conclusion** Symptomatic neurological manifestations of CLL, including optic perineuritis, are extremely rare and sparsely reported in the literature. Despite this rarity, it is crucial for the general internist, neurologist, and hematologist to have an early suspicion for this pathology to maintain expedited diagnosis and treatment to prevent further neurological deterioration.
MEITL with abdominal mass and without evidence of celiac disease.

73-year-old gentleman presented with a syncopal episode, reporting peri-umbilical pain and abdominal fullness and 30 lbs. weight loss over 4 months. CTA chest/abdomen/pelvis showed a 10 × 7.8 cm necrotic mass in the left lower quadrant and mesenteric lymphadenopathy and 2 cm nodule in left upper lung lobe. Exploratory laparotomy with resection of the mass revealed high-grade CD3+ primary T-cell lymphoma with extensive ulceration and intraepithelial lymphocytosis with villous atrophy. Immunohistochemistry showed positivity for CD7, CD8, CD56, CD103, BCL-2, cyclin D1 and negative for CD2, CD4. T-Cell receptor gamma and delta gene rearrangement was positive, beta gene rearrangement was negative. FISH was negative for Epstein-Barr virus encoded RNA. Final diagnosis was monomorphic epitheliotropic intestinal T-cell lymphoma.

Bone marrow biopsy showed trilineage hematopoeisis without involvement by lymphoma. PET/CT scan showed 2.2 cm FDG avid left upper lobe lung mass and mesenteric lymphadenopathy with increased uptake. Patient was started on anthracycline-based regimen with EPOCH and plan for HSCT at complete remission (CR-1).

MEITL is an aggressive, rare PTCL, classically CD 3+, CD 8+, CD 56+, CD 4-, with T cell gamma, delta gene rearrangement. Whole genome sequencing has revealed driver mutations in SETD2, STAT5B and CERBPP offering potential mimics EATL, anaplastic large cell lymphoma and other indolent T-cell lymphoproliferative disorders. Current treatment approach is surgical debulking followed by multi-agent anthracycline-based chemotherapy. HSCT after CR-1 can achieve complete remission of cancer.

Resolution of PNP in this case is likely due to treatment resistance is common.

Purpose of Study After exploring links between COVID-19 causing hypercoagulability, there are sources that suggest pulmonary comorbidities such as deep venous thrombosis (DVT), Venous thromboembolism (VTE), pulmonary embolism (PE), disseminated intravascular coagulation (DIC), sepsis, and acute respiratory distress syndromes (ARDS) may be linked to patients with COVID-19 and hypercoagulability.

Methods Used This literary review was performed based on depth research of previous articles involving COVID-19 and hypercoagulability, pulmonary embolism and VTE, and pulmonary comorbidities. The criteria for this article was also reflective of more recent literature reviews and studies focused mostly in China, as well as articles that showed differences and expectations of other viruses from the coronavirus family.

Summary of Results Lung diseases have proved to be fatal or cause significant comorbidities in patients with COVID-19. While COVID-19 most commonly presents with respiratory symptoms and can progress to ARDS, cases with circulatory dysfunction leading to DIC and sepsis also have been accumulating. Total depletion of coagulation factors in DIC was also found to predict mortality in patients with associated lung disease with COVID-19. Thrombosis is also more likely to occur in hypoxic conditions such as pneumonia due to increased blood viscosity from increased erythrocytes, thus promoting the connection between lung comorbidities, hypercoagulability and COVID-19. The potential benefit of tPA with concurrent use of heparin in those COVID-19 patients with pulmonary embolism to reduce mortality with small bleeding risk has also been reported. Additionally, as mentioned above, in those patients with COVID-19, heparin use seemed to be beneficial in situations with elevated D-dimer.

Conclusions While COVID-19 primarily presents with acute URI symptoms, there have been several more severe symptoms based on different comorbidities. Hypercoagulability appears to be one such symptom that in patients with more comorbidities has resulted in complications such as pulmonary embolism.
IDIOPATHIC THROMBOCYTOPENIA AND SEVERE MENORRHAGIA IN A PATIENT WITH ALBRIGHT HEREDITARY OSTEODYSTROPHY- PSEUDOHYPOPARATHYROIDISM-1A

L Suh*, E Beckett, J Fanar, JM Mack. University of Arkansas for Medical Sciences, Little Rock, AR

10.1136/jim-2021-SRMC.394

Purpose of Study We present a case of a 15-year-old female with hypothyroidism who presented with severe anemia and thrombocytopenia in the setting of prolonged menses who was diagnosed with Albright Hereditary Osteodystrophy-Pseudohyoparathyroidism-1a (AHO-PHP-1a) as well as idiopathic thrombocytopenia (ITP).

Methods Used Chart review.

Summary of Results A 15-year-old female with hypothyroidism presented with severe anemia and thrombocytopenia in the setting of prolonged menses. Her exam was notable for obesity, short stature, pallor, round facies, shortened 4th metacarpals/metatarsals, subcutaneous calcifications, and scattered bruising.

Initial labwork showed profound anemia (hemoglobin 7.3 mg/dL), thrombocytopenia (platelets 15K/μL), hypocalcemia, hyperphosphatemia and significantly elevated parathyroid hormone (518 pg/mL) and thyroid stimulating hormone (19 mIU/L). Patient was diagnosed with PHP-1a and started on levothyroxine, rocalcitol and calcium carbonate. Additionally, she was started on norethindrone acetate for menstrual suppression and received 20 ml/kg PRBCs and 5 mg/kg of platelets for suspected platelet dysfunction related to her PHP-1a. Her counts and symptoms improved, so she was discharged home, but within weeks, she presented to an outside hospital with complaints of bleeding and dizziness. She was again found to have thrombocytopenia (11K/μL); however this time, counts did not recover after platelet administration, but only improved after IVIG infusion. This leads us to believe she likely has a combined immune mediated platelet destruction in addition to platelet dysfunction.

Conclusion While there is research being conducted on the effect of mutations affecting Gs-alpha proteins on platelet function, the way this translates into clinical presentations of patients with AHO-PHP-1a is still unclear. Therefore, separate diagnoses such as ITP should be considered in patients with AHO-PHP-1a who present with bleeding or thrombocytopenia.

SUBCUTANEOUS PANNICULITIS LIKE T-CELL LYMPHOMA PRESENTING WITH HLH

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10.1136/jim-2021-SRMC.395

Case Report A thirty-four year old man with no past medical history presented with two months of a rash on his lower back and daily fevers up to 103°F. Additionally he had fatigue and loss of appetite resulting in an 18-pound weight loss. He had previously been treated with sulfasalazine-trimethoprim and clindamycin for presumed cellulitis. He had erythematous indurated dusky plaques on his right neck, bilateral lower back and hips, right upper abdomen and groin, which were not painful, or pruritic. He also had faint erythematous pink macules scattered on his trunk and bilateral upper extremities. His lab work revealed elevated liver enzymes, cytopenia, ferritinemia, hypertriglyceridemia, and increased levels of soluble IL-2 receptors. These findings along with fevers and hemophagocytosis seen on skin biopsy met criteria for hemophagocytic lymphohistiocytosis (HLH). Further evaluation of the skin biopsy led to a diagnosis of subcutaneous panniculitis like T-cell lymphoma (SPTCL) alpha/beta subtype. He was started on cyclophosphamide 5 mg/kg day and dexamethasone 20 mg/day. The patient noted almost immediate improvement in his skin lesions and laboratory abnormalities trended towards patient’s baseline within two weeks.

Discussion SPTCL typically presents with erythematous painless plaques and nodules on the trunk and extremities. Systemic symptoms include fever, chills and weight loss. Cytopenia and elevated liver enzymes are common. The two types of SPTCL are alpha/beta and gamma/delta with the former being the less aggressive. SPTCL presenting with HLH portends worse outcomes. Historically, many of these cases were treated with aggressive cytotoxic chemotherapy including cyclophosphamide, doxorubicin hydrochloride, vincristine sulfate and prednisone (CHOP) based regimens; however, patients frequently relapse. There is no standardized treatment for SPTCL but previous studies suggest successful treatment with systemic steroids and cyclophosphorine.

Conclusion Our findings suggest that HLH secondary to SPTCL may be treated with cyclophosphorine and dexamethasone to achieve rapid clinical and symptom management of this rare malignancy.

PEMBROLIZUMAB ASSOCIATED PERICARDIAL EFFUSION

A Thomas*, EL Turner, S Ruiz. East Tennessee State University James H Quillen College of Medicine, Johnson City, TN

10.1136/jim-2021-SRMC.396

Case Report Prognosis of advanced esophageal cancer is poor. Pembrolizumab is an Immune checkpoint inhibitor (ICI) that exerts activity by inhibiting the PD-L1 ligand on activated lymphocytes. Recently it has been studied in advanced esophageal cancer with promising results. Immune-Related adverse effects (IRAE) are a major concern for the use of ICI. We are reporting a case of pericarditis with effusion after pembrolizumab treatment for esophageal adenocarcinoma.

A 64-year-old male with stage IV poorly differentiated esophageal adenocarcinoma with metastasis to the lungs and mediastinum presented with acute onset chest pain radiating to left arm. He was diagnosed with esophageal adenocarcinoma 10 months ago and failed to respond to leucovorin-fluorouracil-oxaliplatin and Ramcireumab -Paclitaxel regimens. He was started on Pembrolizumab a month ago and had received two doses. He was tachycardiac and on physical exam heart sounds were distant. EKG showed sinus tachycardia and serial troponins were negative. A CTA Chest obtained for suspicion of pulmonary embolus showed progressive metastases as well as pericardial effusion. Subsequent echocardiography confirmed pericardial effusion without tamponade. Patient showed significant improvement with methylprednisolone treatment and was discharged on oral prednisone.
ICI based therapy is currently approved for the treatment of many malignancies. Proven efficacy and low adverse effects compared to other cancer chemotherapies make ICIs attractive. IRAE occurs in up to 2% of people receiving ICI therapy due to over activation of the immune system, it can affect any organ system. There are reports on specific association between pericardial disease and lung cancer in patients treated with ICI but is not always limited to lung cancer, as in our case. Almost all reported cardiotoxicity occurred early in the course of treatment. Malignancy associated pericardial effusion is a close differential that cannot be ruled out without pericardial fluid analysis, but the temporal relationship to treatment points towards IRAE. No guidelines are available on treatment of this condition, but steroids are often successful but rarely pericardiocentesis or pericardial window is needed.

**Abstracts**

**397** VERTEBRAL COLLAPSE AS A PRESENTING FEATURE OF LEUKEMIA: AN UNCOMMON PRESENTATION OF A COMMON CHILDHOOD MALIGNANCY

HL Valdin*, M Alioca Marrero, W Accousti, Z LeBlanc. LSU/Children’s Hospital, New Orleans, LA

10.1136/jim-2021-SRMC.397

**Case Report** Precursor B cell Acute Lymphoblastic Leukemia (B-ALL) is the most common type of childhood cancer, commonly presenting with fevers, pancytopenia, or bone pain. Atypical presentations are often misdiagnosed, leading to a delay in treatment. We discuss a case of childhood leukemia presenting as back pain with multiple thoracic vertebral fractures.

An 8-year-old female presented to Oncology clinic with worsening back pain and difficulty walking for 3 months. Prior to this visit, she had undergone an extensive work up by her general pediatrician, Rheumatology, and Orthopedics at an outside facility. On review of her records, she had mildly elevated inflammatory markers, worsening pancytopenia, and an MRI with multiple thoracic spine fractures. Following this MRI she was referred to the Children’s Hospital of New Orleans scoliosis clinic, who then referred her to Oncology clinic. During this visit, her pain had progressed such that she could no longer walk with initial labs only notable for a hemoglobin of 9.6 g/dl. Her labs did not demonstrate any evidence of peripheral blasts or tumor lysis syndrome. Bone marrow aspirate was consistent with B-ALL. She was admitted to the oncology service and started on chemotherapy.

Vertebral collapse as the presenting feature of ALL occurs in 1–3% of children. Of this small percentage, these patients have been found to have better prognostic factors compared to children without vertebral involvement. In atypical presentations, the presence of cytopenias or abnormal bone marrow uptake on MRI, such as in our patient, are possible indicators of leukemia, although they often are missed. Our patient’s care has been coordinated with Endocrinology, and she underwent treatment with bisphosphonates and Vitamin D in conjunction with chemotherapy with resolution of her back pain and improvement in her daily functioning. This case emphasizes the need to maintain a high index of suspicion for leukemia in the setting of an unusual presentation with subtle lab and imaging abnormalities to prevent a delay in diagnosis and reduce morbidity.

**Abstract 398 Table 1** Laboratory investigations

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**399** MYELODYSPLASTIC SYNDROME – ONE YOUNG PATIENT’S ROAD TO REMISSION

CB Whitlefield*, NC Smith, M Mitchell, JM Kalada, A Mansurov, E Spradling. East Tennessee State University James H Quillen College of Medicine, Johnson City, TN

10.1136/jim-2021-SRMC.399

**Introduction** Myelodysplastic syndrome (MDS) can cause major clinical problems in affected patients secondary to cytopenia
Malaria is an infection caused by the parasite and causes a flu-like illness with cyclical fever, headache, and chills. Transferred to humans by the *Anopheles* mosquito, the parasite infects the liver and replicates in red blood cells leading to severe anemia. The disease is uncommon in the US. On the other hand, Epstein Barr virus (EBV) is a human herpesvirus that infects B lymphocytes to cause a variety of infections, but the acquisition of EBV in pediatric patients typically presents as infectious mononucleosis. This case presents a rare coinfection of both malaria and EBV.

An 11-year-old male presented with 2-days of intermittent fevers, body aches, and reduced appetite. Travel history was notable for a trip to Sierra Leone (endemic chloroquine-resistant malaria) for over 1 month prior to returning to the US about 3 weeks prior to presentation. He was on quinine-resistant malaria for over 1 month prior to returning to the US, but there is evidence to suggest that gammaherpesviruses can increase susceptibility of malarial acquisition. Such coinfections can present a diagnostic challenge. In this case, the pancytopenia on CBC is what alarmed the physician and resulted in hospital admission. The peripheral blood smear was used to diagnose malaria, while serological titers were used to diagnose EBV infection. Physicians should be aware of the possibility of such presentations despite their relative rarity.
negative, including cryoglobulins, proteins C and S, and antiphospholipid antibody panel. She was treated with sodium thiosulfate. Unfortunately, she became unresponsive and ultimately expired.

Discussion This case highlights a rare complication of MM called retiform purpura. Retiform purpura is a broad term referring to cutaneous manifestations of vascular occlusion. The differential diagnosis includes protein C and S deficiencies, antiphospholipid antibody syndrome, cryoglobulinemia, and calciphylaxis. Interestingly, there are multiple case reports of calciphylaxis in patients with MM. One case report described a patient with MM who developed calciphylaxis ten weeks after having severe hypercalcemia, similar to our patient. Unfortunately, despite improvement in myeloma, our patient expired.

**Case Report**

A 57-year-old female presented with progressive lower extremities weakness for 8 months without urinary or bowel incontinence. Laboratory results revealed polycythemia and thrombocytosis. CT chest, abdomen, and pelvis showed mesenteric and subcutaneous edema. MRI pelvis with contrast showed a large destructive bone lesion involving the sacrum extending into the sacral spinal canal and encasing nerve roots. MRI lumbar spine with contrast suggested leptomeningeal enhancement of cauda equina and nerve roots at the conus level. MRI brain with contrast was suspicious for subarachnoid hemorrhage. EMG and NCS were consistent with denervation process and neuropathy likely related to lumbarplexopathy. SPEP showed 0.62 g/dl IgG lambda monoclonal band, with normal serum creatinine, calcium, and CBC. Pelvic mass biopsy confirmed monoclonal plasma cell neoplasm. Chemotherapy started for plasmacytoma. Next day, she developed acute global aphasia and right hemiparesis. CTA of head and neck showed symmetric areas of acute ischemia, non-opacification of both MCA segments, and uniformly diminished caliber of both extracranial ICAs with abnormal contour of intracranial ICAs. Cerebral angiography suggested chronic occlusion of bilateral intracranial carotid arteries with evidence of significant stenosis of distal ICAs. Moyamoya disease was suspected considering the characteristic bilateral angiographic appearance in the context of ischemic stroke. Heparin was initiated, but patient remained in a poor neurological state. She was transitioned to hospice care at home.

Discussion MMD is an entity of unknown etiology, with bilateral stenosis of the arteries around the circle of Willis with prominent arterial collateral circulation. Diagnosed by identifying characteristic appearance on MRI or angiography. The most common presentation is ischemic stroke and TIA affecting the anterior circulation of the brain. ICH is less common SAH as with this patient is rare. The coexistence of MDD, lumbarplexopathy, and leptomeningeal involvement by plasmacytoma is a rare occurrence that was observed in this patient. In multiple myeloma and solitary plasmacytoma, leptomeningeal involvement is uncommon as seen in this patient and associates with poor prognosis.

**Infectious diseases/HIV/AIDS**

**Joint plenary poster session**

**4:30 PM**

**Thursday, February 25, 2021**

**403 COVID INDUCED THYROID STORM**

A Abbas*, H Hall, LS Engel. LSU Health Sciences Center, New Orleans, LA

10.1136/jim-2021-SRMC.403

Case Report A 71 year old woman with history of left leg sciatica, HTN and thyroid disease presented with myalgias, confusion, abdominal pain, and decreased appetite for one week. Upon arrival, she was found to be febrile to 101.5 degrees Fahrenheit, in atrial fibrillation with rapid ventricular response (RVR) and had oxygen saturations in the 80s. Her chest x-ray demonstrated bilateral interstitial opacities and she tested positive for COVID-19. Her Labs were significant for TSH 0.01 IU/L, free T4 1.25 ng/dl, and total T3 92 ng/dl. She was initially given metoprolol and amiodarone, which resolved the atrial fibrillation with RVR, and was started on propylthiouracil and hydrocortisone for thyroid storm. Propylthiouracil was held due to low blood pressures. During the hospitalization, the patient was intubated for worsening respiratory status. She did receive azithromycin, ceftriaxone and hydroxychloroquine for COVID. Additionally her hospital course was complicated by acute kidney injury which resolved spontaneously. Eventually she was able to extubated and weaned to room air. The patient was discharged home with methimazole, metoprolol and apixaban.

Discussion Thyroid storm is a clinical diagnosis based on an exaggerated response to elevated thyroid hormone levels. In patients with diagnosed or undiagnosed hyperthyroidism many precipitating factors like acute illness can induce thyroid storm. In the case of our patient, COVID-19 most likely triggered her presentation. While lab results typically show elevated free T4 and total T3, treatment for thyroid storm should be based on high clinical suspicion. The Burch-Wartofsky Point Scale can be used to assess the likelihood of thyroid storm. This scale includes factors such as temperature, CNS dysfunction, tachycardia, atrial fibrillation, heart failure, GI dysfunction and presence of a precipitating factor. Initial management involves increasing adrenergic tone with beta-blockers and reducing peripheral conversion of T4 to T3 with propylthiouracil.

**404 A CASE OF 2019 NOVEL CORONA VIRUS (COVID-19) PRESENTING WITH SPLENIC INFARCTION**

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10.1136/jim-2021-SRMC.404

Introduction The 2019 Novel Coronavirus (COVID-19) is currently causing a pandemic all over the world. The most common symptoms are fever, cough, myalgia, fatigue, headache, dyspnea, sore throat, vomiting, and diarrhea. Elderly patients may present with end-organ failure, ARDS, shock, acute
kidney injury, or even death. We present a case of COVID-19 who presented with splenic infarction.

**Case presentation** We present a case of an 18-year-old patient tested positive for COVID-19 after she was in close contact with a family member diagnosed with COVID-19. She was asymptomatic when she got tested positive; however, she developed left upper quadrant pain after two days. At the ED, lab workup was normal, a CT scan of her abdomen showed splenic infarction (figure 1). She was started on aspirin and low molecular weight heparin.

**Discussion** The thromboembolic complications of COVID-19 have been described in the literature. The most common are deep venous thrombosis and pulmonary embolism, especially in critically ill patients despite the use of prophylactic anticoagulation. Several studies showed that post-mortem biopsies showed widespread microthrombi. Arterial thrombosis has been described as well, like stroke and limb ischemia. Our case had a special presentation as the only presenting symptom was left upper quadrant pain that turned out to be splenic infarction. The pathogenesis beyond the hypercoagulability in COVID is not well understood. Some studies propose direct endothelial injury by the COVID-19, causing microvascular inflammation, endothelial exocytosis, and endothelitis. Yet, no definitive mechanism has been described.

**406 AN ATYPICAL PRESENTATION OF COVID-19 INFECTION WHO PRESENTED WITH MENINGEAL SIGNS**

**Introduction** The 2019 Novel Coronavirus (COVID-19) is currently causing a pandemic all over the world. The most common symptoms are fever, cough, myalgia, and fatigue. Few patients present with headache or hemoptysis. Elderly patients may present with end-organ failure, ARDS, shock, acute kidney injury, or even death. We present a case of COVID-19 who presented with meningeal signs.

**Case presentation** A 51-year-old male patient presented to the ED for fatigue of 2 days duration. Two weeks before his presentation, the patient was hospitalized for severe malaria caused by P. falciparum with heavy parasitemia of 30 percent. He was on a trip to Africa. Immediately after he arrived, he complained of fever, chills, sweating, and fatigue. He was diagnosed with severe malaria based on heavy parasitemia of 30% on the thick and thin smear. He was started on artesunate therapy. His condition started to improve, and the thick and thin smear confirmed no parasitemia before discharge. Two weeks later, he started to feel fatigued. In the ED, the thick and thin smear confirmed no parasitemia. His hemoglobin level was 6.5 g/dl with no source of bleeding. He received two units of packed RBCs; however, they failed to raise his HB above 7. His workup showed positive Coomb’s test, decreased haptoglobin, and increased LDH. The artesunate therapy was the only reason that explained his new-onset autoimmune hemolytic anemia.

**Discussion** The mortality rate in patients with severe malaria is very high. Artesunate is the first-line treatment in patients with severe malaria. Artesunate can cause delayed hemolytic anemia after 7 days. Patients with higher parasite density have a higher likelihood of delayed hemolytic anemia after treatment. The mechanism of delayed anemia following artesunate is not fully understood; it is associated with increased levels of ring erythrocyte surface antigens or by the P. falciparum histidine-rich protein-2 concentrations. Monitoring the hemoglobin level at day 7, 14, and 30 is crucial following artesunate therapy.
A CASE OF OZENA PRESENTING AS ASEPTIC PRIMARY CNS LYMPHOMA AND TOXOPLASMOSIS IN THE UNITED STATES

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Case Report Primary atrophic rhinitis also known as ‘Ozena’, is a rare condition that causes atrophy of the nasal mucosa along with nasal discharge and crustning. The bacteria most commonly associated with this condition is Klebsiella ozenae, which is mostly seen in areas such as Saudi Arabia, China, Africa, India, the Mediterranean and the Philippines. This bacteria is fairly uncommon in countries such as the United States and the United Kingdom, however when seen, it is mostly seen in immigrants. Klebsiella ozenae is known to cause atrophic rhinitis. However, it can manifest with mastoiditis, meningitis, soft tissue infection, or bacteremia. We present a case of a 48 year old man who presented with abdominal pain, nausea, vomiting, diarrhea, shortness of breath, and altered mental status. Patient migrated to the United States from Mexico 30 years ago, and last visited the country 8 years ago. CT Scan and Lumbar puncture revealed aseptic meningitis, resulting from severe bilateral mastoiditis with chronic otitis media as a parameningeal source. During hospitalization, the patient had symptoms and signs consistent with atrophic rhinitis. Klebsiella ozenae bacterium was isolated from patient’s sputum. He was treated with IV ceftriaxone for six weeks and symptoms improved on therapy. Given the unfamiliarity of this entity in the Western World, a delay of diagnosis of such cases might result leading to devastating outcomes. Accordingly, it is essential to understand how to identify this condition and its broad spectrum of presentation that goes beyond atrophic rhinitis.

PRIMARY CNS LYMPHOMA AND TOXOPLASMOSIS IN AN HIV PATIENT

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Case Report Among the many CNS lesions associated with HIV, the two leading etiologies in developed countries are Toxoplasmosis and primary CNS lymphoma. Due to the similarities in clinical presentations and radiological imaging, it is difficult to distinguish these two from each other.

A 38-year-old male with previously undiagnosed HIV presented to an inpatient service with altered mental status. Initial radiological imaging showed multiple ring-enhancing lesions on the brain. Labs showed an HIV viral load of 320000, a CD4 count of 110 and serology was positive for toxoplasmosis and EBV. After initiation of toxoplasmosis treatment as well as anti-retroviral medication, the patient began to show clinical signs of improvement. Possibility of CNS lymphoma was initially entertained but not pursued due to invasive nature of the workup and significant clinical improvement clinically and radiologically on the toxoplasmosis treatment. After 4 weeks, patient improvement stagnated. This stagnation was attributed to patient’s inability to receive adequate nutrition secondary to his inability to swallow. He was started on parenteral feeds and eventually placed on tube feeds. After enteral feeding, patient again showed signs of improvement for about 1 week and then slowly started deteriorating. Repeat labs showed an HIV viral load of 0 but a decreased CD4 count of 94. Repeat MRI showed worsening ring-enhancing lesions in the brain, and a diagnosis of possible primary CNS lymphoma was made. After discussing the poor prognosis with family, a decision was made for the patient to be placed in palliative care.

Primary CNS lymphoma and toxoplasmosis can coexist in a patient with HIV. Initiation of toxoplasmosis treatment can improve patients’ clinical symptoms, but it can also mask the presence of primary CNS lymphoma as brain lesions in both pathologies can wax and wane throughout the course of the disease. Even though the patients viral load improved significantly, his CD4 count failed to improve on anti-retroviral treatment. The rate of CD4 count improvement is dependent on patient’s initial status rather than the initiation of anti-retroviral treatment. This case report highlights the importance of definitively ruling out all possible etiologies of HIV-associated CNS lesions despite initial clinical or radiological improvement.

ERYSIPelas ASSOCIATED TO BACTEREMIA BY UNCOMMON ORGANISM BREVUNDIMONAS DIMINUTA

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Case Report Brevundimonas species are non-lactose-fermenting, aerobic gram-negative bacilli previously classified as members of Group IV of the genus Pseudomonas. These bacteria species are environmental organisms rarely isolated in microbiology laboratories and a very uncommon cause of human infection. When isolated, the two most common species that cause human infections are Brevundimonas Vescularis and Brevundimonas Diminuta. There are limited reports of infections caused by Brevundimonas species in the literature.

We present a 69-year-old morbid obese Hispanic woman with no toxic habits and past medical history relevant for bronchial asthma and chronic venous insufficiency. Patient was hospitalized for left lower extremity cellulitis treated with Ceftriaxone and Clindamycin for 7 days. One week after discharge patient presented to ER with chief complaint of progressive fatigue, general malaise, and bilateral leg edema.
Associated symptoms were a well-demarcated leg erythema rash, swelling, and warmness consistent with erysipelas. In laboratories patient presented with leukocytosis and blood culture growth a gram-negative bacillus. Empirc antibiotic treatment with parenteral Meropenem was started. Bacteria was identified as Brevundimonas diminuta resistant to Cefazolin, Ciprofloxacin, Ceftazidime, Ceftiraxone and Levofoxacin; and susceptible to Gentamicin, Imipenem, Piperacillin/Tazobactam, Tigecycline, and TMP-SMX. Cefepime was SDD. The patient completed 14 days of antibiotics without complications and repeated cultures were negative in 7 days.

This case represents a soft tissue infection caused by an uncommon organism Brevundimonas spp. There are too few cases reported as leg erysipelas and invasive bacteremia caused by this species. The reason why infection by Brevundimomas spp. must be in our differential diagnosis as a possible cause of nosocomial skin infections.

**Case Report**

A 63-year-old man with a past medical history of latent tuberculosis presented after one month of fever, chills, night sweats, dysphagia, and right sided neck pain. He was hemodynamically stable on admission, and physical exam revealed a non-tender mobile mass. Labs were significant for leukocytosis, hyponatremia, low TSH, elevated free T4, normal T3 and elevated ESR. Initial CT of the neck, chest, and abdomen revealed a 6 cm cystic enlargement of the right thyroid lobe with inflammatory changes in the surrounding tissue. Ultrasound confirmed the thyroid lesion. Subsequent fine needle aspiration revealed a Bethesda Category 2 benign nodule with inconclusive pathology. A repeat fine needle aspiration was performed four days later, draining 200 cc of purulent fluid. A repeat CT showed development of a large heterogeneous abscess measuring 8.8 cm extending from the right thyroid lobe toward the anterior mediastinum, invading the internal jugular vein. The culture grew *Cutibacterium acnes*. The patient ultimately underwent incision and drainage of the abscess and was treated with intravenous ceftriaxone for two weeks.

**Discussion**

Acute suppurative thyroiditis (AST) is a rare, life-threatening infection of the thyroid gland. Due to the vascular nature of the thyroid, its encapsulated structure, and high iodine concentration, bacterial infections are relatively uncommon. AST represents 0.7% of all thyroid diseases. Only 8% of those cases occur in adults and typically in patients with underlying thyroid disease. AST is commonly caused by gram-positive aerobes, particularly MRSA. Only two other case reports have identified *Cutibacterium acnes* as the cause of AST. *Cutibacterium* species are gram-positive, anaerobic bacilli that naturally inhabit human skin, sebaceous glands, and oil follicles. Due to its typically low virulence, it rarely causes serious infections and is most well known for causing acne break outs in teenagers and young adults. However, in both previously reported cases, as well as in this case, the infection occurred after fine needle aspiration. By recognizing this association, measures could potentially be taken to reduce the risk of this life threatening infection.
ulcer lateral to the right eye for 3 weeks. Examination revealed normal vital signs, a 3 cm circular ulcer at the lateral canthus of the right eye. Workup revealed pancytopenia, CD4 count of 14/mL, viral load of 1.44 million copies and HIV-1 genotype. Chest X-ray was unremarkable. Skin biopsy revealed multinucleated keratinocytes with ballooning degeneration consistent with herpes infection. PCR was positive for HSV-2. CT abdomen/pelvis showed bulky lymphadenopathy. Fungalit 1–3 B glucan test was positive. Lymph node biopsy showed budding yeast. He did not have fungemia. Urine histoplasma gal-actomannan antigen was positive. Tuberculosis testing was negative. Acyclovir, itraconazole, anti-retroviral medication and standard prophylaxis were started. The patient improved and was discharged.

HSV-2 usually presents as vesicles in genitalia or perianal areas. Lesions may occur in atypical locations in severely immunosuppressed HIV-infected patients, and tend to be more necrotic and heal slowly. HSV-2 skin infection in the upper face is very rare and can mimic skin neoplasm, Kaposis sarcoma and bacillary angiomatosis which are more prevalent.

Histoplasmosis usually presents with fever, pulmonary involvement with a military pattern on imaging, hence misdiagnosed as pulmonary tuberculosis, splenomegaly and skin lesions. Disseminated form often occurs in severely immunocompromised patients with CD4 counts < 50 cells/mL. Mortality is up to 50% with treatment. Intra-abdominal lymphadenopathy commonly occurs due to lymphoma, metastasis or tuberculosis. But, it is rare in histoplasmosis. There are important lesson to learn from this case; a broad differential diagnostic approach for HIV/AIDS patients considering rare presentations of opportunistic infections may help in early detection, proper management and reducing mortality and morbidity.

413 PSEUDOMONAS AERUGINOSA INFECTIVE ENDOCARDITIS IN HEMODIALYSIS PATIENT WITH NO PRIOR INTRAVENOUS DRUG USE
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Background Infective endocarditis (IE) due to Pseudomonas aeruginosa (PA) is uncommon & associated with high morbidity and mortality. While it is strongly associated with intravenous drug use (IVDU), it is also an occasional case of hospital-acquired endocarditis. In dialysis patients, it is a serious infection with higher mortality rate. Recommended treatment usually involves surgical valve replacement and long-term antibiotics.

Case Report A 38-year-old male with Diabetes Mellitus and End Stage Renal Disease on Hemodialysis through tunneled catheter was being treated by medicine service for chronic osteomyelitis of right ankle. Patient was receiving intravenous daptomycin through central line. He presented with malaise, fever, chills & a deep, purulent right heel ulcer. The patient was admitted with septic shock secondary to diabetic foot infection. Patient underwent below knee amputation of his right lower extremity and 2 sets of blood cultures grew pseudomonas aeruginosa (PA). He was started on Meropenem & Vancomycin. Wound culture also grew methicillin sensitive staph aureus (MSSA) and Enterococcus faecalis. Trans Thoracic Echocardiogram showed Tricuspid Valve (TV) vegetations and severe regurgitation. Catheter tip culture showed growth of staph epidermidis. 2 weeks later, patient spiked fever again. Repeat blood cultures were positive for PA. His tunneled catheter was removed. Antibiotics were switched to tobramycin & ceftazidime. A week later cultures still grew PA. Patient was then taken to the operating room. The TV was found grossly incompetent with multiple large vegetations and was resected. Patient, however, continued to deteriorate postoperatively. Family opted for comfort care and patient expired on postoperative day 3.

Conclusion Mortality despite prompt diagnosis, early and aggressive treatment with broad spectrum antibiotics along with surgical excision of the diseased valve. In conclusion, PA IE without history of IVDU is rare, but a very aggressive disease. With the paucity of literature on this deadly disease, high suspicion & early diagnosis in conjunction with expert consultation are highly encouraged. Additional series of published reports are needed to help manage this disease.
MULTIFACTORIAL CAUSES OF DIARRHEA IN AIDS

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Introduction HIV/AIDS infection is a viral illness acquired through intercourse or exposure to blood of infected blood. Patients in the later stages of their illness can develop opportunistic infections and risk is increased after CD4 count falls below 200. Therapy for AIDS includes antiretroviral therapy in addition to prophylactic medications for opportunistic infections.

Case A 54 year old African American man with a past medical history of HIV/AIDS presented with a chief complaint of non-bloody, non-bilious diarrhea, up to 10 episodes a day for 7 months. The patient also reported frequent night sweats, chills and intermittent fevers in addition to 50 pound weight loss despite compliance with his antiretroviral therapy, which was restarted a month prior to the onset of his symptoms. During the admission, the patient was found to be profoundly hyperkalemic and hyperchloremic in addition to having acute kidney injury secondary to volume depletion from frequent bowel movements. Abdominal CT scan demonstrated pericolic fat stranding and pancolitis. The patient was initially started on broad spectrum antibiotics and volume resuscitated. His stool was antigen positive for campylobacter and giardia, in addition to being positive for norovirus, campylobacter, cryptosporidium and giardia on Biofire panel. He was continued on his ART therapy, started on azithromycin and metronidazole, and he was aggressively fluid resuscitated.

Discussion Patients infected with HIV who have high viral loads and low CD4 counts are at risk for opportunistic infections. The diagnoses can be especially challenging for patient’s with advanced stages HIV illness. In our patient’s case, suspicion was high for opportunistic infection and treatment was initiated prior to test results. For giardia, he was treated with metronidazole; for campylobacter he was treated with azithromycin. For cryptosporidium there is no targeted therapy and he was maintained on antiretroviral therapy. He received supportive care for norovirus. On discharge his bowel movements were improved, although not completely resolved. Further improvement was expected as his immune system reconstitutes.
**LEGIONNAIRE’S DISEASE PRESENTING WITH FEVER AND GASTROINTESTINAL SYMPTOMS**

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**Case Report** A 48 year old man with no significant past medical history presented to the Emergency Department with a three day history of progressively worsening, intermittent, sharp, left flank pain with associated fever, hematuria, and multiple episodes of large volume, watery, diarrhea. He also reported a two day history of headache with photophobia. He was febrile to 104.6 °F at the time of admission. Physical exam was notable for crackles in RLL. Labs on admission were significant for, Na 129 mmol/L, Cl 99 mmol/L, K. 3.5 mmol/L, Phos 1.6 mg/dl, HCO3 22 mmol/L, Cr 1.46 mg/dl (baseline 0.9–1) ALT 11 U/L, AST 24 U/L, and Ferritin >1,500 mg/ml. Urinalysis revealed microscopic hematuria without signs of infection. CXR was unremarkable. CT Abd/Pelvis revealed a posterior right lower lobe consolidation and nonobstructing 3 mm left kidney stone. He was started on antibiotics and supportive care were continued and the patient began to experience symptomatic improvement. Urine Legionella antigen returned positive and the patient was discharged home with instructions to complete the remainder of Levofloxacin. Antibiotics and supportive care were continued and the patient began to experience symptomatic improvement. Urine Legionella antigen returned positive and the patient was discharged home with instructions to complete the remainder of Levofloxacin.

**Discussion** Legionnaire’s disease is a pulmonary illness that may present with atypical symptoms and multi-organ involvement. Fever, cough, shortness of breath, and gastrointestinal symptoms such as nausea, vomiting, and diarrhea are commonly seen with Legionnaire’s disease. Additional clinical features associated with Legionnaire’s are hyponatremia, hypophosatemia, microscopic hematuria, elevated hepatic transaminases and inflammatory markers such as C-reactive protein, erythrocyte sedimentation rate, and ferritin. Diagnosis may be confirmed with PCR, urine antigen (serotype 1), and culture of respiratory secrections. Respiratory fluoroquinolones (Levofloxacin) and macrolides (Azithromycin) are the preferred antibiotics.

**INTRACRANIAL HEMORRHAGE ASSOCIATED WITH THERAPEUTIC ANTICOAGULATION IN THREE CRITICALLY ILL COVID-19 PATIENTS: A CASE SERIES**

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**Case Report** The COVID-19 pandemic has challenged global health with novel pathogenesis that is both severe and poorly understood. Several mechanisms have been proposed to explain the severity and complexity of the clinical illness including cytokine storm release, thromboembolic microangiopathy, direct cytotoxicity, and post-viral bacterial superinfection. Several institutions have instated recommendations for venous thromboembolic (VTE) prophylaxis in COVID-19 infected patients however, the ideal candidates for prophylactic anticoagulation are yet to be identified, let alone selecting the effective agent and the appropriate dose.

The patients in this case series were all admitted to the intensive care unit with respiratory failure from COVID-19 requiring invasive mechanical ventilation. One of three patients was on intermediate-dose anticoagulation due to elevated d-dimer. The other 2 were on full-dose anticoagulation; one was anticoagulated for acute coronary syndrome (ACS) and the other for a persistently clotting dialysis circuit. In terms of potential factors causing the bleeding; the first patient had hypertensive emergency at the time of the bleed, the second and third patients both had supratherapeutic heparin levels at the time of the bleed.

All three patients were on higher than the prophylactic dose of anticoagulation due to concern for hypercoagulability states as indicated by elevated D-dimer or clotting of the dialysis system or ACS. Around 20% of COVID-19 patients develop AKI at some point which further complicates anticoagulation as most anticoagulants need renal adjustment. Activation of coagulation pathways during cytokine storms can result in systemic thromboembolism, in both venous and arterial circulations posing the risk of ischemic infarctions to any organ. Both supratherapeutic heparin levels and acute kidney injuries are common events in COVID-19 patients. The ideal candidates for anticoagulation, the recommended agent and dose, and duration of treatment remain unclear in COVID-19 patients.

Physicians should weigh the benefits of anticoagulation against the potential risk of life threatening bleed.

**CHANGES IN SERUM BIOMARKERS FOLLOWING NEONATAL LIPOPOLYSACCHARIDE EXPOSURE: IMPLICATIONS FOR SUDDEN INFANT DEATH SYNDROME**

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**Purpose of Study** There is clear evidence for an infectious component associated with SIDS. Further, polymorphisms in the promoter region of the TNFα gene, as well as elevated CSF IL-6 levels have been reported in SIDS cases. Previous studies have also demonstrated elevated serum 5-HT levels in SIDS cases, suggesting it may be an early premortem predictor of susceptibility to SIDS. We previously utilized a neonatal rat model of LPS exposure to mimic an infectious component of SIDS and showed that LPS resulted in 50% mortality, which was associated with respiratory dysfunction and an aberrant increase in brainstem TNFα mRNA levels. We now aim to determine whether there are serum biomarkers associated with risk of lethality to LPS in our rat model.

Following LPS exposure, our objectives were to: Determine an association between serum TNFα levels and mortality. Determine whether elevated serum inflammatory cytokine/chemokines comprise early biomarkers of later mortality.

**Methods Used** 10 day old rats received an i.p. injection of LPS (0.1 mg/kg) or saline. Blood samples were collected 2 hours after LPS and rats were observed for mortality over the
following 24 hours. Serum samples were screened for various inflammatory molecules (TNFα, IL-6, IL-10, IL-1β, MIP-2, MCP-1, IL-17A, IFN-γ and IL-4) using a Luminex array.

Summary of Results LPS exposure resulted in 50% mortality. High serum TNFα at 2 hr after LPS inoculation was associated with mortality at 6–7 hr. Mortality was also associated with elevated levels of IL-6, MIP-2 and MCP-1.

Conclusions Elevated serum TNFα was significantly associated with post-LPS mortality and some other serum cytokines. These data may help to better understand the pathophysiology of the infectious component of SIDS by identifying changes in inflammatory markers. Serum pro-inflammatory cytokines could be investigated as early biomarkers of risk of SIDS.

421 AN UNUSUAL CASE OF CULTURE NEGATIVE CEREBELLAR ABSCESS

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Case Report A 37 YO woman presented with worsening symptoms of headache and blurry vision. Patient is HIV negative but has history of IVDU. Two months prior to presentation, she left against medical advice during empiric treatment with vancomycin and ceftriaxone for meningitis. She described headache as 10/10 pain in the occipital region that radiated anteriorly. Upon arrival, she was lethargic but had no focal neurologic deficits. MRI showed a 3 cm abscess in the right cerebellum causing mass effect. Neurosurgery aspirated and biopsied the lesion followed by shunt placement and started steroids and antiepileptic. Infectious Disease Specialists began empiric coverage with Metronidazole, Vancomycin, and Cefepime with plans for 8 weeks of treatment. Complete lab workup listed in table 1 below; of note, all returned negative. Endocarditis was ruled out by echo. It is suspected our patient developed a culture negative brain abscess from partially treated meningitis but responded well to medical and neurosurgical care.

Discussion Cerebellar abscesses compromise <35% of brain abscesses and present with nonspecific symptoms, most commonly headache, delaying diagnosis and treatment. MRI followed by aspiration and biopsy of the lesion is best for confirmation and treatment guidance. Since 30% of brain abscesses are polymicrobial, empiric coverage with cefalosporin, vancomycin, and metronidazole is the standard of care. Development of 16s rRNA and fungitell studies markedly improved isolation of the causative microbes. These PCR studies should be utilized as they have increased detection by 30%. Prognosis depends on pre-surgical consciousness level and duration of antimicrobials after surgery. Medical treatment continued for ≥6 weeks shows recovery rates of >90%.

422 A CASE OF FUSOBACTERIUM NUCLEATUM BACTEREMIA ASSOCIATED WITH METASTIC NEORECTEDERMAL TUMOR

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Case Report Fusobacterium nucleatum (F. nucleatum) is an anaerobic gram-negative oral commensal bacterium. It is implicated in a wide spectrum of diseases including: oral infections, gastrointestinal disorders, adverse pregnancy outcomes, and Lemierre’s syndrome. There is increasing evidence that demonstrates the association of F. nucleatum with cancers especially colorectal cancer. Also, many case reports link F. nucleatum bacteremia with a recent diagnosis of cancer such as esophageal carcinoma, hematologic malignancies, gastrointestinal stromal tumor, melanoma, and breast cancer. We present a case of a 54-year-old postmenopausal Hispanic female who presented with heavy vaginal bleeding for 2 weeks associated with near-syncopal episodes, shortness of breath, and pelvic pain. The patient’s presentation and vitals met criteria for sepsis. Blood cultures grew F. nucleatum, and the patient was started on IV metronidazole, meropenem and Linezolid. CT abdomen and pelvis was remarkable for bulky mesenteric, retroperitoneal, left iliac and inguinal adenopathy as well as an enlarged heterogeneous uterus with multiple masses. Pelvic examination under anesthesia revealed friable cervical mass. Biopsies were taken at that time of the mass, and the pathology for the cervical tumor excision was remarkable for...
primitive neuroectodermal tumor. The patient passed away on day 11 of hospitalization. In conclusion, F. nucleatum bacteremia might be associated with primitive neuroectodermal tumor with an emphasis on increasing mortality in such cases where a recent diagnosis of cancer is made.

423 DELAYS IN HEPATITIS C FIBROSIS STAGING ON LIVER FUNCTION
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Purpose of Study Liver fibrosis staging is essential to determine the choice and duration of hepatitis C (HCV) therapy. Staging is frequently delayed, which may impact patient outcomes. Our study objective was to assess delays in liver fibrosis staging on worsening liver function.

Methods Used A retrospective cohort study was conducted among chronic HCV-infected patients diagnosed in an emergency department in New Orleans, Louisiana from 2015 to 2017. Exposure was defined as the time from chronic HCV diagnosis to fibrosis staging (right upper quadrant [RUQ] ultrasound, FibroSure, or FibroScan). Our primary outcome was change in liver function measured by Aspartate aminotransferase to Platelet Ratio Index (APRI) and Fibrosis-4 (FIB4) score. Hepatic function was measured at the time of HCV screening, time of fibrosis staging, and the start of HCV therapy (if achieved). Analysis was performed using multivariable linear regression models producing risk differences, controlling for history of intravenous drug use (IVDU) and insurance.

Summary of Results In total, 904 patients were included. Participants were on average 55.0 years old (IQR=10.0) and a majority were African American (70.1%), male (78.2%), Medicaid insured (60.1%), and without a history of IVDU (52.3%). RUQ ultrasounds were performed significantly more quickly following HCV diagnosis (120 days, IQR=345 days), compared to FibroSure (232 days, IQR=507 days) and FibroScan (251 days, IQR=383 days) (p<0.0001). APRI was 0.44 (IQR=0.67) at screening, 0.41 (IQR=0.52) at first fibrosis staging, and 0.36 (IQR=0.44) at treatment. FIB4 was 1.68 (IQR=0.74) at screening, 1.67 (IQR=1.61) at first fibrosis staging, and 1.67 (IQR=1.16) at treatment. For each 180-day delay in fibrosis staging following HCV diagnosis, patients had a 13% (p=0.03) and 20% (p<0.001) increase in hepatic dysfunction, as measured by APRI and FIB4 respectively.

Conclusions Longer time from HCV diagnosis to fibrosis staging was significantly associated with an increase in hepatic dysfunction. Following HCV diagnosis, fibrosis staging by RUQ ultrasound had the shortest delay compared to FibroSure and FibroScan. Improving timeliness of fibrosis staging may attenuate decline in hepatic function and improve HCV patient outcomes.

424 PERSISTENT FEVER WITH ACCOMPANYING BACK PAIN
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Case Report We present the case of a 7 year-old patient who presented with unexplained fever for 9 days as well as back, neck, and abdominal pain with decreased appetite. On admission, her ESR and CRP showed significant elevation. Other admission labs, including CBC, CMP, Respiratory Viral Panel, and Monospot were all within normal limits. Persistence of the patient’s symptoms prompted a more extensive workup, including a Spinal MRI that revealed marrow edema and enhancement of multiple vertebral bodies. After an extensive workup and investigation for a potential rheumatologic, infectious, or neoplastic etiology, our patient was found to have Bartonella henselae infection presenting as multifocal vertebral osteomyelitis. The patient’s bacterial infection was confirmed with IgG titer of 1:512. This case highlights the importance of thoroughly investigating any pediatric patient who presents with fever and back pain and emphasizes the need for consideration of atypical organisms when assessing osteomyelitis, especially when symptoms are refractory to treatment. Additionally, it shows the importance of considering atypical manifestations of common diseases such as Cat Scratch Disease (CSD). Cat Scratch Disease is caused by Bartonella henselae, a gram-negative bacilli found on feline fleas that is introduced to the human host via infection through feline bites and scratches. CSD is characterized by self-limited, regional lymphadenopathy lasting 2–4 months (English 2006). In 5–15% of cases, disease can present with atypical manifestations, rarely including bony involvement. (Erdem 2018). It has been reported when reviewing >3000 cases of CSD, only 0.27% revealed osteomyelitis, most commonly involving the spine and pelvis. (Erdem 2018).

425 TWO IN ONE COMBO! TREATING INCOMPLETE KAWASAKI’S AND MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN
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Case Report Most children have mild clinical symptoms after contracting severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) However, in a few cases, a severe immunodysregulation response may occur, now termed multisystem inflammatory syndrome in children (MIS-C). MIS-C is uncommon at a rate of 2/100,000 cases in children. Most documented cases have been reported in adolescents, and reports of cases in toddlers are rare. Here we describe the inpatient management of a toddler who presented with signs and symptoms consistent with both MIS-C and incomplete Kawasaki’s disease.

A 14-month-old male was brought to the emergency room after having a fever with a Tmax of 103F for four days and a maculopapular, non-pruritic rash that first appeared behind his ears and then generalized across his body. In the ED, patient had a fever of 102.5 F and was tachycardic to the 170s. He was ill-appearing, so he received a bolus of fluids and Tylenol with some improvement. Labs were remarkable for normal white blood cell count, thrombocytopenia, and elevated CRP, ESR, ferritin, and BNP. Infectious diseases (ID) was consulted due to concern for MIS-C and Kawasaki’s disease. Patient met the criteria for Incomplete Kawasaki’s disease with 5 days of fever, mucous membrane changes, a
polymorphous rash, elevated CRP, anemia, hypoalbuminemia, and elevated ALT. Patient presented during the SARS-CoV-2 pandemic and tested negative for SARS-CoV-2 antigen on rapid testing but tested positive for SARS-CoV-2 antibodies, meeting the criteria for MIS-C. For the incomplete Kawasaki’s disease diagnosis, an ECHO was done, and patient was started on IVIG and medium dose aspirin of 30–50 mg/kg/day. MIS-C labs were trended and patient was started on Decadron and low-dose Aspirin, prophylactic Enoxaparin, and a steroid taper to follow up with pediatric ID, cardiology, rheumatology, and hematology.

As SARS-CoV-2 has become a common virus, pediatricians should be prepared to handle this disease with a concurrent diagnosis of Kawasaki’s disease. Although, MIS-C is more common in adolescents, there have been isolated cases in toddlers as well, so recognition and treatment of MIS-C in this age group is critical.

Case Report COVID-19 pandemic caused a heavy global burden of disease. The disease causes atypical pneumonia but affects several other organs, making for unique presentations. We present a case of myocarditis due to COVID-19 infection.

Introduction Early detection of infective endocarditis (IE) is imperative for improving morbidity and mortality. IE, originating from bacterial infection of prosthetic heart valves, intravenous drug use, or immunosuppression, can prove fatal, with the production of septic emboli and end-organ damage. This case report elucidates the severe, yet subtle, presentation of subacute bacterial IE.

Case A 56-year-old male presented with acute cerebrovascular accident; labs revealed vitamin B12 deficiency and pancytopenia. The patient was discharged, but returned with progressive dysphagia and significant weight loss. Labs indicated a worsening pancytopenia, acute kidney injury, and hypocomplementemia. Upon discharge after this encounter, he was readmitted for respiratory symptoms and tested positive for influenza A. He met sepsis criteria and blood cultures grew Enterococcus faecalis. Physical exam revealed a new diastolic murmur and widened pulse pressure. Transesophageal echocardiogram revealed IE with aortic valve perforation.

Discussion This patient presented with several systemic signs and symptoms of IE including ischemic stroke, acute kidney injury, dysphagia, weight loss, vitamin deficiencies, and cutaneous lesions. Each diagnosis was managed separately with every hospitalization, without consideration for one etiology. Using Hickam’s dictum to separately explain this patient’s presentation, rather than utilizing Occam’s razor to identify one encompassing diagnosis, led to delays in proper management.

Conclusion IE can be difficult to diagnose due to various subtleties in the clinical picture that are patient-specific. Blood cultures should be part of pancytopenia workup without identifiable cause. In diagnostic uncertainty, clinicians should attempt to connect all clinical manifestations under a single encompassing diagnosis.
Invasive pneumococcal disease (IPD) is defined as the isolation of Streptococcus pneumoniae from a normally sterile site but not sputum. Austria’s syndrome is the triad of pneumococcal endocarditis, meningitis, and pneumonia. We report a methamphetamine user who was confirmed to be infected with pneumococcal bacteria in at least 5 sites including Austria’s syndrome.

**Case Description** A 60-year-old man with no significant medical history was found unresponsive by his neighbor and presented with neck stiffness on physical examination. He later developed acute hypoxic respiratory failure requiring endotracheal intubation. He is a binge drinker on the weekends, and methamphetamine was detected in his urine. Contrast-enhanced chest-abdomen-pelvis computed tomography revealed multifocal pneumonia, bilateral psoas abscesses, and right infraspinatus muscle abscess. Blood, sputum, and cerebrospinal fluid cultures grew pan-susceptible Streptococcus pneumoniae. Transesophageal echocardiography (TTE) revealed a 1.4 × 0.9 cm vegetation on the tricuspid valve with mild tricuspid regurgitation. He was initially treated with intravenous ceftriaxone and underwent incision and drainage of right psoas abscess, but cardiac intervention was deferred due to his unstable medical condition at that time. However, he still had recurrent fever and confusion. Repeat TTE showed larger tricuspid vegetation, and he also developed septic emboli at the posterior basal right lower lobe pulmonary artery. The patient underwent tricuspid valve debridement and was finally discharged after completing intravenous ceftiraxone therapy for 6 weeks after surgery.

**Discussion** This case illustrates the methamphetamine use as a risk factor for IPD due to its multiple effects on immunity. More studies are required to explore the potential association of methamphetamine with IPD. Our patient developed pneumococcal endocarditis but has responded very well after having cardiac surgery. So, prompt cardiac surgery for pneumococcal endocarditis is crucial if indicated.

**Abstract 430**

**AN ATYPICAL CASE OF VARICELLA-ZOSTER VIRUS (VZV) MENINGOENCEPHALITIS: ABSENT SKIN FINDINGS IN AN IMMUNOCOMPROMISED ADULT**


10.1136/jim-2021-SRMC.430

**Case Report** Meningoencephalitis caused by VZV can present diagnostic challenges due to variable presenting symptoms. This infection is especially difficult to diagnose in the absence of classic vesicular eruptions. We herein report a case of a 27-year-old female with three days of worsening headache and neck rigidity in the absence of seizures and encephalopathy. She reported a history of HIV and endorsed consistent antiretroviral use since her diagnosis, two years prior to presentation. Following an unremarkable non-contrast CT scan, a lumbar puncture was done. The patient was then empirically treated with antibiotics and acyclovir. CSF analysis showed increased RBC and lymphocyte counts, along with elevated protein and decreased glucose. CSF cryptococcal antigen and HSV PCR were negative. MR brain showed foci of FLAIR hyperintensities in the frontal lobe, midbrain, and cerebellum. Repeat CSF analysis confirmed VZV infection and CD4+ count was 489 cells/mm³. Intravenous acyclovir was continued,

**Abstract 430 Figure 1** Axial FLAIR MRI images revealing hyperintense lesions
and the patient reported resolution of symptoms on day three of treatment. In total, acyclovir was administered for 21 days, and the infection resolved without neurologic deficits. The patient was asymptomatic on follow-up visits and never developed skin findings. This case is evidence that, even in the absence of classic vesicular eruptions, VZV infection should be considered in an immunocompromised individual.

**Case Report**

Aspergillus is a fungus found in soils and in the majority of the individuals, however disease does not causes an infectious process. When inhaled, it may lead to Invasive aspergillosis, especially on immunocompromised patient. Invasive infections are caused by members of the *A. fumigatus* species complex.

Case of a 60-year-old man, homeless and chronic smoker with medical history of asthma, schizophrenia and HIV/AIDS, who presented to the emergency room with complaints of dyspnea on exertion and dry cough of four days evolution. Upon review of systems, patient stated having hemoptysis and lower extremity edema. Denied fever, chills, weight loss, chest pain, recent travel, or sick contacts. Vital signs showed normal BP, irregular rhythm and respiratory rate of 25 bpm. Physical examination revealed a right upper lung rhonci. Laboratories remarkable for leukocytosis, neutrophilia and monocytosis, thrombocytopenia. Chemistry with bicarbonate of 36 and elevated LDH. CXR showed right upper lobe cavitary lesion measuring approximately. Chest CT showed necrotizing pneumonia at the right upper lobe with cavitary areas and at the left middle lobe medial segment. Other laboratories HIV, Hepatitis, Influenza and Mycoplasma were unremarkable. Differentials at the time included tuberculosis, granulomatous disease vs malignancy. Treatment inpatient covering for HAP due worsening respiratory function. A bronchoscopy was performed and came back positive for aspergillus species, so he was started on Voriconazole for 6 weeks with clinical improvement.

Shortness of breath and hemoptysis in a homeless, past smoker patient raises concerns for cancer as well as tuberculosis. The objective of this case is to highlight the need to expand the differential diagnoses in immunosuppressed individuals, taking into consideration Invasive aspergillosis, a rare condition characterized by progression of the infection to vascular infection resulting in infarction and tissue necrosis. Prompt diagnosis is crucial and consist of combination of culture and histopathological findings, which in many cases is not feasible due to risk of complications related to presenting thrombocytopenia. Increase awareness of the serum antigen, culture and pathology allows for early diagnosis and accurate management.

**Case Report**

Legionnaires’ disease is a severe form of pneumonia resulting from Legionella infection. This disease has a mortality ranging from one to ten percent. On imaging, it is often indistinguishable from other forms of pneumonia. Case A 59 year old man with no known past medical history presented to the hospital with non-bloody, watery diarrhea, dizziness, dyspnea, and confusion. Several coworkers in his machine shop had similar symptoms in the prior weeks. On initial exam, he was confused, his SIRS was \( \frac{3}{2} \) (febrile, tachycardic, tachypneic), qSOFA was 2/3 (AMS and tachypneic) and he was hypoxic. Lactate was normal and procalcitonin was 0.76. Left lower love infiltrate was evident on chest radiograph. He had hyponatremia and elevated liver function tests. Vancomycin, piperacillin and azithromycin were started. Urine antigen test for pneumococcus and legionella as well as legionella PCR were ordered. His condition deteriorated the following day; he became tachypneic, de-saturated to low 80s on 5L NC. CT scan of his chest demonstrated a multifocal infection and centrilobular embolism. His diarrhea and pulmonary status improved and he was able to be discharged to home to complete a course of Azithromycin but required supplemental oxygen. His urine legionella returned negative; however, legionella PCR returned with a positive result after discharge. Interestingly, patient had noted on further discussion his recent side job of helping to replace old A/C units, most recently in the weeks before falling ill.

**Discussion**

Legionella is a formidable atypical pathogen in the differential of community-acquired pneumonia, with mortality up to ten percent. This pathogen is associated with exposure to contaminated water sources such as air conditioning units. Antibiotic coverage includes macrolides and fluoroquinolones. Suggestive clinical features of Legionella include GI symptoms such as diarrhea, hyponatremia and elevated LFTs. Urine is frequently tested for the presence of Legionella pneumophilia serogroup 1 antigen. Legionella PCR that includes all serogroups can detect infection when serogroup 1 is not present.

**Case Report**

Sphingomonas species is a group of gram-negative, aerobic, oxidase-positive bacteria that have been reported to cause community-acquired and nosocomial infections in adults. This bacteria can be found in the soil and water and can also be isolated from medical equipment in the hospital. In the pediatric population, it has primarily been reported in immunocompromised individuals. We present a case of a previously healthy 6-year-old female who presented with erythema, swelling, and abscess formation with purulent drainage on her right great toe, following a trauma that occurred while she was playing on a boat. She complained of severe pain in her toe and refused to bear weight on that foot. She also developed a lacry, sandpaper-like rash diffusely on her body. She remained afebrile throughout the course of the illness. On presentation, vitals were stable, WBC was 17.9 with neutrophilic predominance, and CRP quantitative was elevated at 11.80. An incision and drainage was performed and a wound culture was collected, along with a blood culture. She was admitted for concerns of lymphangitis and was started on IV
ACUTE POLYARTHITIS SECONDARY TO ENTEROVIRUS IN A PEDIATRIC PATIENT

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Case Report A 4-year-old previously healthy male was admitted for one day of joint swelling and rash. Two weeks prior, he had fever, sore-throat, and runny nose with emesis. On admission day, patient’s right hand was swollen and painful subsequently involving left knee. Later, his left hand was involved along with bilateral knees and ankles. He was also noted to have an erythematous macular rash over his legs which progressed to his back along with one febrile episode.

Laboratory studies showed WBC 14.87 × 10³/μL with 64.5% neutrophils, CRP of 0.8 mg/dL and ESR of 22 mm/hr. Rapid strep and ASO titers were sent. He received IM penicillin for possible rheumatic fever and anti-staph antibiotics which were later discontinued when blood, urine, and throat culture were negative. Echocardiogram was normal. Respiratory multiplex PCR was positive for rhinovirus/enterovirus. His rash and polyarthritis completely resolved two days after hospitalization. Ferritin level, ANA and Rheumatoid Factor (RF) were sent for rheumatological causes such as systemic juvenile idiopathic arthritis (JIA). With Ferritin at 43 ng/mL systemic JIA was unlikely. Rapid strep, RF and ASO titers were negative. ANA titer was positive at 1:320.

Low ANA titer can be seen in acute viral arthritis. With rapid resolution of arthritis and rash along with positive respiratory multiplex PCR for enterovirus, patient was diagnosed with viral induced polyarthritis.

ACUTE HIV INFECTION PRESENTING AS FACIAL LYMPHEDEMA

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Case Report 19-year-old African American male came to ED with recurrent facial swelling and rash. His symptoms started 4 months ago as a mild peri orbital swelling. He was seen by multiple specialties and treated with multiple courses of antibiotics and steroids for presumed infection and allergy with no improvement. Patient had myalgia and fever 4 months prior which resolved with supportive care. Patient is sexually active with multiple partners but denies using protections. Family history of lupus in maternal aunt.

Vitals were normal except for High BP of 142/88. Physical finding significant for periorbital swelling and firm, tender and generalized violaceous nodules.

Labs were normal except for mild anemia and leukopenia. Given the insidious onset facial swelling, rash, high BP, family history of lupus nephrology was consulted. Screening labs for autoimmune diseases including lupus, RA, sarcoidosis and leukocytoclastic vasculitis were negative. Infectious workup revealed positive for HIV -1 with CD4 cells of 108. Serology for Hepatitis A was reactive. Other STI labs were negative. His lesions were consistent with HIV Kaposi sarcoma(KS) and biopsy positive for HHV-8. Patient’s facial swelling was attributed to lymphedema. After starting on HAART, viral load decreased significantly with increase in CD4+ cells. But at the same time his facial swelling and Kaposi lesions worsened.

Patient Kaposi was staged as T1 (due to lymphedema), Immune 1 (Initial CD4 < 200) and S-0 (no systemic involvement). Systemic chemotherapy with liposomal Doxorubicin started due to worsening lymphedema and rash. 3 weeks post chemo facial swelling and rash improved remarkably with increased appetite and weight gain.

HIV-KS is the most common tumor in the HIV infection with CD4 + cells < 200. Lymphedema associated with KS commonly affects the face, neck, lower extremities and genitals and can manifest before the cutaneous lesions. Extra cutaneous manifestations and lymphedema is associated with aggressive
HIV-KS. Pediatric Kaposi sarcoma in kids is distinct from adult which can rapidly progress to disseminated course. Complete remission and event free survival can be achieved by combination of HAART and chemotherapy by slowing the neoplastic process. Increased awareness of HIV-KS and early diagnosis is important for better outcomes in pediatric patients.

436 CHALLENGES IN THE DIAGNOSIS OF COVID-19 PATIENTS

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Background Coronavirus disease 2019 (COVID-19) is an ongoing pandemic and is considered to be highly contagious. Severe infections have been associated with acute respiratory distress syndrome (ARDS) and significant increase in mortality rate. Early detection, contact tracing and social isolation have been paramount to reducing the spread of COVID-19. The purpose of this case series is to highlight the variable clinical presentation of the disease, possible causes for delayed diagnosis, and the significance of false negative laboratory testing for patients with COVID-19.

Case presentation Six patients with confirmed COVID-19 were included in this case series. Mean (SD) age was 62.3 years (±21.0). Mean (SD) body mass index (BMI) was 29.7 (±7.7 kg/m²). Five patients (83%) were men. Half of the patients (3/6) were African-American, two were Caucasian, and one was Hispanic. Half of the patients had fever upon presentation. Inflammatory markers such as lactate dehydrogenase, C-reactive protein, and ferritin were initially elevated. One patient had leukopenia and two had lymphopenia. All patients recovered except one patient who developed severe ARDS requiring invasive mechanical ventilation and passed away on hospital day 11. Half of our patients (3/6) had atypical presentation and/or initial negative molecular testing with typical computed tomography findings suggestive of ground-glass opacities (figure 1).

Conclusion Early diagnosis is crucial in this disease course and in preventing further spread in the community. Exploring potential causes of delayed diagnosis and false negative tests is warranted given the severity of the disease course.

437 BACTERIA AWAKENING: AN INFECTION WARRANTING WORK-UP

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Case Report Oligella urethralis is an aerobic gram-negative coccobacillus of which scarce pathogenic infections have been described in literature. Reports of bacteremia are few and affect patients with underlying immunosuppressive conditions. We present an atypical bacteremia case in a patient that warranted workup for underlying malignancy.

A 68-year-old male with medical history of interstitial lung disease and prostate adenocarcinoma s/p prostatectomy presented due to onset of four daily episodes of watery-brown diarrhea for two days that ensued after eating at a fast food. The patient reported associated poor oral intake and increased shortness of breath. Denied fever, chills, nausea, vomits, chest pain, gastrointestinal bleeds, dysuria or weight loss. Physical examination remarkable for positive bowel sounds and epigastric tenderness. Urinalysis negative for bacteriuria or pyuria. COVID-19, Mycoplasma, Influenza negative. Patient received IV fluid rehydration, but lactic acid & leukocytosis continued increasing. Preliminary blood cultures revealed gram negative coccobacillus. IV Ceftriaxone started with immediate resolution of lactic acidemia and leukocytosis. Final blood cultures identified Oligella urethralis. Abdominal computed tomography with contrast, negative for an infectious or inflammatory process. Renal ultrasound without evidence of nephrolithiasis or hydronephrosis. Urine cytology negative for malignancy, PSA <0.014 ng/mL, post-surgical baseline. Patient had colonoscopy performed 6 years prior without polyps, masses, or erythematous mucosa. Anemia work-up unremarkable. Patient completed 14 days of IV Ceftriaxone and was discharged hemodynamically stable and asymptomatic.

Given reported cases associated to obstructive uropathy and underlying malignancies such as metastatic colon cancer, adenocarcinoma of prostate and metastatic lung adenocarcinoma a search of occult malignancy with imaging and laboratories was undertaken and resulted negative. The mechanism of infection in our patient remains unclear; however, clinical evolution was in accordance with literature that suggests rapid and adequate response to antibiotics. Therefore, asserting the
malignancy screening is up-to-date in patients with *Oligella urethralis* infection should be considered as further studies emerge regarding the clinical significance of this bacteria.

**Abstracts**

**438 CLADOPHIALOPHORA BANTIANA BRAN CABSCESS IN AN IMMUNOCOMPETENT PATIENT**

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Case Report Cerebral phaeohyphomycosis is a very rare infection of the central nervous system (CNS) caused by dematiaceous fungi. It is commonly a disease of immunocompromised patients. *Cladophialophora bantiana* is the most common agent identified with this disease, which has found to have a predilection for the CNS in immunocompetent individuals.

A 65-year-old patient with diabetes, hypertension, hyperlipidemia, coronary artery disease came with blurry vision, left frontal headache for 3 weeks, difficulty remembering directions, difficulty with learned motor skills like driving. He denied seizures, focal weakness, weight loss, night sweats, recent travel history. He was afebrile, vital signs were normal. Neurological exam showed right visual field defects and gross confrontation abnormalities bilaterally despite corrective lenses. Labs negative for leukocytosis. Liver function and renal function were normal. MRI brain showed multiple irregular thinned-walled ring-enhancing lesions in bilateral occipital lobes and left frontal lobe, the largest lesion measuring 3.2 × 2.2 cm, with vasogenic edema and 3 mm midline shift concerning for abscess or solid tumor. Treatment was initiated with vancomycin, ceftriaxone, metronidazole, and dexamethasone. HIV, blood cultures were negative. Beta-glucan was elevated to 100 pg/ml. Histoplasma and Blastomyces urine antigens were negative. Drainage of occipital abscess was done and the smear from the fluid showed fungal hyphae on direct smear. The patient was started on liposomal amphotericin B; which was continued as monotheraphy. Fungal cultures from surgery grew a black mold, which was identified as *Cladophialophora bantiana*. Antifungals were changed to voriconazole based on sensitivities. Patient had resolution of his visual field defects after surgery. He was discharged and currently being treated with voriconazole for 10 months.

The treatment is not standardized for cerebral phaeohyphomycosis and it has very high mortality even in immunocompetent patients. Amphotericin B is the most commonly used agent for treatment. Itraconazole and voriconazole have broad activity against dematiaceous fungi and are often used for these infections. Complete surgical resection is necessary for an optimal outcome. Prolonged follow-up is also necessary as relapses are also not uncommon.

**439 IN STROKE AND FEVER: TIME MATTERS!**

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Case Report Infective endocarditis (IE) is the infection of the endocardial surface of the heart. Fever is present in 90% of the patients leading to cardiac (50%), neurological (40%), and septic emboli (25%) complications. IE incidence has risen from 11/100k to 15/100k population between the year 2000–2011. In the US 31% of IE cases are from staphylococci aureus and 17% are from streptococci viridans group. Streptococci salivarius is a normal flora in humans that rarely causes invasive disease like IE.

We report a case of a 73 y/o male with multiple comorbidities presenting with confusion, fever, and fatigue. The initial examination showed left-sided weakness and the patient was evaluated for possible stroke and sepsis. Blood cultures grew streptococcus salivarius and the CT brain in the ED showed right basal ganglia hypodensity. Suspecting endocarditis, the patient underwent MRI brain and TEE which were remarkable for right basal ganglia/left centrum semiovale infarctions and posterior mitral leaflet rupture with vegetations, respectively. The patient was started on appropriate antibiotics and he underwent mitral valve repair surgery.

Our patient’s IE due to streptococcus salivarius was likely due to underlying structural heart disease. He developed both cardiac and neurological complications, but early identification and initiation of both appropriate antibiotics and surgical management helped prevent further complications. One study showed that early initiation of appropriate antibiotics reduced the risk of stroke from IE emboli from 4.8/1000 in 1st week to 1.7/1000 in 2nd and <0.2/1000 in 5th week.

Multidisciplinary team with cardiologists, cardiothoracic surgeons, neurologists, and infectious disease physicians have shown to reduce mortality in IE patients. We highly encourage physicians to keep a low threshold for evaluating the possibility of IE in a setting of stroke, fever, and underlying structural heart disease in order to start early empirical antibiotics to reduce further embolic complications.

**SARS-COV-2 SHOCK**

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We report a case of a 45 y/o female presenting with typical cardiac chest pain, 9/10 intensity, and associated with dyspnea, diaphoresis, and nausea. The CT angiogram was negative for PE, EKG showed nonspecific ST-T wave changes, but her high sensitivity was 3071 upon arrival. COVID-19 test was positive. The patient was in a shock state with low BP and was treated with nor-epinephrine, hydrocortisone, and fludrocortisone. She, however, did not have any respiratory symptoms or hypoxia. The patient was managed medically with NSTEMI protocol.

COVID-19 can cause myocardial injury by many mechanisms; stress cardiomyopathy, direct injury from hypoxemia, inflammatory myocarditis, thrombosis secondary to a hypercoagulable state, and plaque rupture after cytokine storm. However, in the majority of the cases, it is Type II myocardial ischemia that underlies the elevated troponin due to demand-supply mismatch.
Our patient not only had typical chest pain with elevated high sensitivity troponin but also she was in a shock state. Her echocardiogram showed EF 60% with no regional wall motion abnormality. Hence, her shock was likely secondary to systemic hyperinflammatory response and vasodilatation due to COVID-19 infection.

In light of the COVID-19 pandemic, we wanted to present this interesting case of elevated troponin and shock in a patient diagnosed with COVID-19 with no respiratory symptoms and no myocardial infarction. In the future, we hope to better understand the mechanisms by which COVID-19 causes myocardial injury.

Case Report

SARS-Cov-2 has changed how we perceive our daily lives. This modern pandemic has resulted in a lot of morbidity and mortality, while we still try to understand its genetics and pathophysiology. Like SARS-Cov and MERS-Cov, SARS-Cov-2 also belongs to the β-coronavirus family.

We report a case of a 57 y/o male presenting with left-sided weakness and left facial droop. The patient’s initial CT brain showed no bleeding and he was given tPA. After the tPA patient’s weakness and facial droop improved, CT angiogram of the head/neck was unremarkable except for a 2.8 cm saccular aneurysm arising from the inferior aspect of the distal left internal carotid artery, these findings were also found on post tPA MRI/MRA brain. The patient had also been diagnosed with COVID-19 approximately 2 months ago. During his current admission patient had no respiratory symptoms but he again tested positive for COVID-19 even after 2 months of his initial positive test.

This is a rare and unique case in many ways. COVID-19 has been associated with stroke causing secondary to a hyper-coagulable state. But we are reporting a patient whose COVID-19 was associated with a carotid artery aneurysm. To our knowledge, no such case has been reported so far. Our case raises questions regarding the possible mechanisms by which COVID-19 can cause vascular injury leading to an aneurysm. Since our patient remained positive for SARS-Cov-2 well beyond 2 months (one of the longest periods reported), there may well be a relation between persistent positivity and direct vascular injury by the virus. Unfortunately, a baseline carotid imaging was not available in this previously asymptomatic gentleman.

As more information trickles in on a daily basis regarding this evolving pandemic, our case highlights the need for further investigation on vascular disease pathogenesis of this viral illness among other sequelae.

Physicians should be aware that a protracted SARS-Cov-2 infection may present with symptomatic carotid aneurysm.

Case Report

A thirty-two year old man with a history of untreated hepatitis C, IV heroin and cocaine use presented with complaints of severe diffuse 8-10/10 abdominal pain, nausea, and several episodes of non-bloody, non-bilious emesis associated with fevers, chills and dark urine. He last injected heroin and cocaine one day prior. He denied any alcohol or medication use, including antibiotics, in weeks leading to hospitalization. On admission, he was febrile to 101.3°F, without leukocytosis and was hemodynamically stable. Initial admit labs included: AST 792 U/L, ALT 1081 U/L, AP 156 U/L (all indicating hepatocellular pattern of liver injury), total bilirubin 7.1 mg/dl and INR 1.3. HIV test was negative, acetaminophen level was negative, hepatitis panel was positive for HCV and total HAV antibodies. HAV IgM was negative, suggesting previous infection. Abdominal ultrasound was unremarkable. He continued to fever in first two days of admission but reported subjective improvement in abdominal pain and was able to tolerate oral intake. Patient’s LFTs continued to up-trend (AST 1796 U/L, ALT 2540 U/L, AP 148 U/L and total bilirubin 14.1 mg/dl). The patient eloped from hospital on day 3. Following his elopement, final labs revealed he was positive for HSV ½ by IgM antibody testing, indicating that the patient’s acute hepatitis was likely secondary to HSV. Attempts to contact the patient to alter his therapy failed.

Discussion

Herpes simplex virus (HSV) is a particularly virulent pathogen, though one not commonly seen, as a causative agent of viral hepatitis. Furthermore, HSV hepatitis is rare in patients who are not immunocompromised. Classically liver disease caused by HSV infection is characterized by anicteric hepatitis with systemic symptoms (such as fever, tachycardia, etc.), as well as marked elevation of LFTs into thousands. Because of high mortality associated with it and necessity of early IV antiviral therapy, prompt consideration of HSV should be made in workup of acute hepatitis of unknown origin, including in immunocompetent hosts.

Introduction

Human metapneumovirus (hMPV) is an RNA virus described in 2001 by investigators studying children with unspecified viral respiratory illness. The study suggested the virus has likely been circulating for at least 60 years and that virtually all humans are exposed as children. Most severe infections are in children <5 years old, with immunocompromised, elderly, and those using antibiotics as the majority of adult cases. In this report, we describe a course of pneumonia in a woman positive for hMPV.

Case Report

73 year old white female with a history of bronchiectasis and recurrent UTI was brought to the ED for fever and AMS. She had 1 week history of dyspnea, cough with white sputum, nasal congestion, headaches, back pain, and fatigue. Recently she was treated for UTI with nitrofurantoin, on day 7 of 20. Temperature was 39.8 C; O2 sat was 81%. Other vitals and labs were normal. Bilateral coarse breath sounds with scant wheezing were found on otherwise unremarkable physical exam. She received supplemental O2 via nasal cannula and a PA/lateral chest X-ray. Saturation improved to 91%, and X-ray revealed a small, patchy
airspace opacity at the right lung base, representing bronchiectasis or possible consolidation. Blood, urine, and sputum cultures were drawn, and PCR was negative for flu A/B. She received initial doses of ceftriaxone and steroid therapy and was admitted to inpatient service for community-acquired pneumonia (CAP).

She was positive for hMPV via nasal swab PCR, prompting contact and droplet isolation. Blood cultures were negative, sputum cultures grew oral flora, and urine cultures grew E. coli and P. aeruginosa - antibiotics were continued. Her respiratory status improved; she was soon afebrile with O2 saturations >90% on room air, and on the 5th day after admission she was discharged home.

Discussion Viral causes of CAP include influenza, adenovirus, parainfluenza, RSV, and hMPV. The symptoms of hMPV in most adult infection are non-specific and include cough, nasal congestion, and dyspnea, but data on its role in lower airway diseases requiring hospitalization, even in low-risk populations, are emerging. Diagnosis is done with reverse-transcriptase PCR, and treatment is supportive. In vitro studies of ribavirin have shown activity against hMPV, but no clinical data exists currently.

SUPRAVENTRICULAR TACHYCARDIA: A NEW PEDIATRIC COVID-19 COMPLICATION

L Silverstein*, T Harris, Y Nathani. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

Case Report Supraventricular tachycardia (SVT) is a heart rhythm that is abnormally fast and originates above the ventricles. It is one of the most common arrhythmias in the pediatric population and is prevalent in about 0.1 to 0.4 percent of children. The majority of cases of SVT arise from reentrant rhythms. However, in a recent retrospective study, there were cases of SVT found in acutely sick individuals with no prior history of any cardiac arrhythmias. Currently, in light of COVID-19, it is important to be aware of the different presentations and pathologic associations with this virus.

A previously healthy full-term 4-month-old male presented to the ED with fever, cough, congestion, and diarrhea for 3–4 days. Upon further questioning, the mother reported experiencing symptoms concerning for COVID-19 in the last week—loss of sense of smell and taste. On exam, the patient was noted to be tachypneic and tachycardic to 230–240 beats per minute with the EKG revealing SVT. The patient was only briefly converted from SVT following two doses of adenosine. He was subsequently started on an esmolol drip due to continued SVT and admitted to PICU for further management. The patient’s PCR for COVID-19 was positive. The remainder of the diagnostic work-up, including an echocardiogram, was unremarkable. Shortly after initiation of esmolol, the patient’s rhythm converted back to normal sinus rhythm. Prior to discharge, he was gradually transitioned to oral propranolol and scheduled for outpatient follow up with a cardiac electrophysiologist.

Many reports illustrate COVID-19’s association with myocarditis and other inflammatory effects among the pediatric population, known as Multisystem Inflammatory Syndrome in Children (MIS-C). However, at this time, there is very limited published literature noting a potential connection between COVID-19 and the occurrence of SVT in a structurally normal heart in children. It is unclear if COVID-19 was the cause of this patient’s extreme tachycardia and SVT. Nonetheless, it is a correlation that should be examined further and providers should be aware of this potential occurrence when treating pediatric patients.

ABSTRACT WITHDRAWN

CLINICAL OUTCOMES OF PATIENTS WITH END-STAGE KIDNEY DISEASE HOSPITALIZED WITH COVID-19

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Purpose of Study The purpose of this study is to report clinical outcomes of ESKD patients with COVID-19 admitted to
an academic hospital in New Orleans, given the lack of data in the literature.

**Methods Used** We conducted an observational study in patients with ESKD and COVID-19 hospitalized at Ochsner Medical Center over a 7-week period. We compared rates of need for mechanical ventilation, shock, need for intensive care (ICU) and in-hospital mortality as outcome measures between patients with and without ESKD.

**Summary of Results** Among 851 admissions (67% black) with COVID-19, 49 (6%) patients had diagnosis of ESKD. Patients with ESKD were mostly male [61% vs 49% in non-ESKD (n = 806), p = 0.10] with a median age of 64 (38 – 90) years. Median body mass index (BMI) were 32 vs 27 kg/m² (p = 0.11) for those admitted to ICU vs wards, respectively. Thirteen of them (27%) vs 293 (37%) in the non-ESKD group (p=0.16), were admitted to an intensive care unit (ICU). In-hospital mortality rate for the ESKD cohort was 32% compared to 24% for non-ESKD (p = 0.21). Compared to a subset with 161 patients with acute kidney injury (AKI) with 50% mortality, the 32% mortality rate in ESKD was significantly lower (p = 0.027). Shock and/or mechanical ventilation requirement were comparable between groups [12 (24%) of those with ESKD vs 213 (26%) of non-ESKD, p = 0.65]. Median serum ferritin level was significantly more elevated in ESKD compared to non-ESKD [2125 vs 633 ng/mL, p = 0.0019].

**Conclusions** Clinical outcomes in individuals with ESKD with COVID19 appear to be grossly similar to that of non-ESKD population with COVID19. The similar mortality rate was seen despite higher levels of ferritin, suggesting that the interpretation of the significance of serum ferritin in ESKD has to be done with caution. Furthermore, the mortality in ESKD patients with COVID19 is lower than that observed in AKI. The observed lack of increased mortality in ESKD does not align with the outcomes of this patient population in other critical illnesses. The ability to mount and exaggerated inflammatory response in COVID19 might be somewhat restricted in ESKD.

### 447 A CASE OF VERTEBRAL DEGENERATION

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**Case Report** A forty-three year-old man with a history of metastatic embryonal testicular cancer in remission, IV heroin use and partially treated vertebral osteomyelitis four months prior, presented to the hospital with worsening back pain, fevers, night sweats, and weight loss. During this four-month gap, he continued to use IV drugs. On exam, he had a large mass on the midline of his spine near T10 that was tender to palpation and firm without fluctuance but not warm to touch. He had full sensation and motor control to all extremities. Computed tomographic (CT) scan of his spine demonstrated near complete destruction of the T10 and T11 vertebrae. On admission, infection was presumed to be the cause, but his labs were not supportive (white blood cell count 5300 x 10^3/ul, sedimentation rate 15 mm/hr, C-reactive peptide 0.5 mg/dl, and blood cultures were negative). Due to the paucity of lab evidence to support an active infection, an oncologic workup was performed. However, serum levels of alpha-fetoprotein and human chorionic gonadotropin were unremarkable. In order to definitively characterize the mass, Interventional Radiology performed a CT-guided bone biopsy, which revealed in MRSA. A six-week regimen of IV vancomycin was arranged for chronic vertebral osteomyelitis. Orthopedic planned surgical intervention following antibiotics to provide stabilization for his severely destroyed thoracic region.

### 448 COVID-19 CHARACTERISTICS OF READMISSION AND OUTCOMES AND SOCIAL DETERMINANTS OF HEALTH STUDY: A PROPOSAL FOR DEVELOPMENT OF A COMPREHENSIVE RISK SCORING SYSTEM TO PREDICT COVID-19 READMISSIONS TO SEVEN ATLANTA AREA HOSPITALS

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10.1136/jim-2021-SRMC.448

**Purpose of Study** Although clinical characteristics and clinical outcomes of hospitalized COVID19 patients have been described, a comprehensive knowledge of patient-level data, including social determinants of health, in patients with resultant 30-day hospital readmissions is limited. This retrospective prospective study will describe clinical characteristics, clinical outcomes, and social determinants of health of COVID-19 adults with all-cause 30-day hospital readmissions to 7 Atlanta hospitals.

**Methods Used** Clinical data of PCR-confirmed COVID19 positive adult patients ( ≥ 18 years old) with non-scheduled hospital readmissions within 30 days of initial (index) admission will be extracted from the electronic medical records (via the clinical data warehouse and manual chart reviews) of patients admitted to 7 Atlanta hospitals between 3/1/20–12/31/20. Patient demographics, clinical characteristics, comorbidities, diagnostic workup, COVID-19 and non-COVID-19 specific treatment, clinical outcomes and discharge characteristics will be extracted from each patient’s initial (index) admission and readmission. Patient residence zip code level data will be utilized to analyze social determinants of health including, but not limited to, occupation, education, diversity index, and median household income.
Summary of Results Data from each of the 7 hospitals will be integrated within a central database to create a data repository. To predict risk factors for readmission, a machine learning-based prognostic model, which is ideal in predicting risk factors with large data resources, will be utilized. Three levels of risk, including infection risk, severity risk, and outcome risk, will be analyzed.

Conclusions This comprehensive data collection and mining platform on COVID-19 readmitted patients will provide a collaborative, multi-hospital data repository to inform hospitals of predictors for readmission and may augment current readmission prevention tools.

Case Report A 66-year-old man with history of left fifth toe osteomyelitis and subsequently ray amputation in 2017, well controlled type two diabetes, and hypertension, presented with fever and infected left diabetic foot wound. Initially, the patient was treated with empiric vancomycin and cefepime. He was found to have methicillin sensitive staphylococcus aureus (MSSA) bacteremia and left foot (third and fourth metatarsus) osteomyelitis with pathologic fractures. Empiric antibiotics were de-escalated to nafcillin and metronidazole. Antibiotics were de-escalated to nafcillin and metronidazole. His rash resolved, and his kidney function returned to his baseline without any further need for dialysis.

Discussion Penicillins are the most common cause of drug allergy. Previous literature suggested cefazolin may be safe for use in patients with non-IgE mediated hypersensitivity reaction to nafcillin. While leukocytoclastic vasculitis was undoubtedly associated with nafcillin, the onset of glomerulonephritis could be related to cefazolin. Our case is similar to a previous case report that described a patient developing crescentic glomerulonephritis after receiving cefazolin for MSSA post-laminectomy wound infection.
451 BEFORE DISASTER STRIKES: A PILOT INTERVENTION TO IMPROVE PEDIATRIC TRAINEES KNOWLEDGE OF DISASTER MEDICINE

AR Donahue*, 2S Brown, 3S Singh, 2N Shokur, 2IB Burns, 3K Duval, 3D Tuell. 1The University of Alabama at Birmingham, Birmingham, AL; 2East Tennessee State University, Johnson City, TN

Purpose of Study Since training in pediatric disaster medicine (PDM) is neither required nor standardized for pediatric residents, we designed and integrated a PDM course into the curriculum of a pediatric residency program and assessed if participation increased residents’ knowledge of managing disaster victims.

Methods Used We adapted and incorporated a previously studied PDM course into a small-sized pediatric residency program. The curriculum consisted of didactic lectures and experiential learning via simulation with structured debriefing. With IRB approval, the authors conducted a longitudinal series of pre- and post-tests to assess knowledge and perceptions.

Summary of Results Sixteen eligible residents completed the intervention. Prior to the course, none of the residents reported experience treating disaster victims. Pairwise comparison of scores 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).

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. This PDM course may be used in future formulation of a standardized curriculum.

452 EVALUATION OF A HUMANITIES COURSE IN THE CLINICAL SETTING (HANDS ON HUMANITIES)

S Hagan*, C Hester. The University of Oklahoma Health Sciences Center, Oklahoma City, OK

Purpose of Study Many US medical students experience burnout, loss of empathy, and frustration with the lack of patient interaction in their early training years. Humanities-based courses in medical school curriculum can decrease burnout and foster empathy. We seek to determine if integrating the clinical environment into a novel humanities course affects general well-being and burnout in second year medical students.

Methods Used 6 second year medical students at OUHSC were assigned to a novel arm of an eight week, multi-disciplinary Humanities course in Fall 2019. This provided the first opportunity for pre-clinical students to enter the clinical setting, interviewing hospitalized children and their caregivers. Enrolled students were given validated empathy and general well-being (GWB) surveys before and after the course. Results were analyzed to identify changes in the pre- and post-surveys. A semi-structured group interview at the end of the course was led by an experienced facilitator to gain additional qualitative feedback about the students’ experience.

Summary of Results None of the surveys yielded statistically significant changes, although for most participants GWB decreased over the course and empathy remained stable. The qualitative analysis revealed both positive and negative sentiments including connection with patients, self-reflection, and reconciling the difficulties faced by patients. Several students were surprised at the strong sad or difficult emotions this direct patient experience generated. Overall recommendations were to include a wider variety of patients and to structure the dialogue to incorporate more of the assigned materials.

Conclusions Combining the qualitative analysis with the quantitative analysis, it is difficult to ascertain whether the decrease in GWB is due to external vs internal factors. Long term studies could be helpful in determining if a short term decrease in GWB could lead to long term improvements over the course of a medical career. Future studies will incorporate the suggestions made by the students in addition to keeping the current construct. Since this is the first exposure these students have to patients and their problems, we will continue to carefully debrief difficult emotions that may arise in the hopes of fostering skills, modeling coping behaviors, and encouraging self-reflection.

453 AN ENVIRONMENTAL SCAN OF PATIENT-ACCESSIBLE CHILD CARE PROGRAMS AT NORTH AMERICAN HOSPITALS

K Preston*, M MacDonald, P Ingledew. 1The University of British Columbia Faculty of Medicine, Vancouver, BC, Canada; 2BC Cancer Agency Vancouver Centre, Vancouver, BC, Canada

Purpose of Study The National Cancer Institute estimates that 20.1% of newly diagnosed cancer patients are between the ages of 20 and 54. This age range represents typical parenting years, suggesting that many of these patients may also be the primary caregivers of children. Qualitative studies focusing on this subject thus far indicate that parents with cancer struggle to balance their own care needs with those of their children. Further, existing studies suggest that a lack of childcare during cancer treatments can impact treatment compliance and increase existing psychological stress. In the efforts to establish a child-minding program at a major Canadian cancer centre, we used an environmental scan based on lay-accessible grey literature in order to map the current state of childcare services available to patients at hospitals across Canada and the United States.

Methods Used An environmental scan of the grey literature was conducted by investigating 161 Canadian and American hospitals for on-site childcare services, using lay-accessible searching techniques (hand-searching hospital websites, phone correspondences and email correspondences). A standardized data extraction sheet was then used to extract centre characteristics.

Summary of Results Twenty-six on-site, patient-accessible centres were identified based on pre-determined inclusion criteria. Of these, 76.9% of centres were associated with pediatric hospitals, and 69.2% were located in the United States. Most centres (76.9%) were open for over 30 hours per week, and 88.5% of centres were free of charge to users. Other characteristics, including capacity, age range, user groups, limitations on use, staffing, registration options and funding structure, varied widely.
Conclusions These results represent an inventory of patient-accessible, on-site childcare services currently available at hospitals across North America, and show that only 26 of 161 hospitals were found to have such services. Cancer patients who are also parents may especially need this kind of instrumental support, particularly as they are at high risk for financial toxicity. This highlights the need for further investigation of the need for on-site childcare services, and the evaluation of existing services.

Neonatology case report
Joint plenary poster session
4:30 PM
Thursday, February 25, 2021

454 AN INFANT WITH ABSENT CLAVICLES
M Almasi*, M Mehdi, J Gonzalez, S Jain. University of Texas Medical Branch, Galveston, TX; The University of Texas Medical Branch at Galveston, Galveston, TX

Case Report A male infant was born at term by vaginal delivery to an 18 yo G2P1 mother with APGARs of 4 and 8 at 1 and 5 minutes of life. Delivery was complicated by tight nuchal cord and chorioamnionitis. Following birth, the infant required positive pressure ventilation for recurrent apneic spells.

The infant’s newborn examination was significant for wide open fontanelles and a boggy scalp with a palpable fluid thrill. Head CT showed under-ossification of the calvarium especially the left parietal bone (figure 1-A). A chest x-ray showed absence of the clavicles bilaterally (figure 1-B). A strong family history of absent clavicles and permanent teeth was reported. In view of these clinical findings, imaging and family history, we diagnosed the patient with cleidocranial dysplasia (CCD).

With around 14% of neonatal clavicular fractures being missed on the newborn physical exam and 55% of neonatal clavicular fractures being diagnosed exclusively by imaging, it is imperative to perform a thorough newborn physical exam to avoid overlooking clavicular pathologies. Cleidocranial dysplasia (CCD) is a rare (1 in 1 million) autosomal dominant syndrome affecting primarily the bones, formed via intramembranous ossification, including the cranium and clavicles, and teeth. CCD is associated with a mutation in the RUNX2 gene, which is responsible for coding CBFA1; a transcription factor involved in the differentiation of osteoblasts. CCD presents as short stature, wide open anterior fontanelle, dental abnormalities, recurrent upper respiratory infections due to abnormal development of the sinuses, absent clavicles resulting in excessive shoulder mobility and skeletal defects such as inverted pear shaped calvaria, pes planus and genu valgum.
(AFP), cortisol, and blood glucose levels; all were within normal limits. On DOL 6, the OMFS team was able to excise the epulis without complications. That same day, the patient was able to tolerate a pacifier and bottle feeds, showing only mild swelling at the incision site. Acetaminophen was used for pain management. The baby was discharged from the NICU on DOL 10.

LESSONS LEARNED FROM A SEVERE ISOVALERIC ACIDEMIA PATIENT WITH HYPERAMMONEMIA

J. Bolen*, C. Zimmerman, Y. Enchautey-Colon, D. DeMarzo, A. C. Tsai. The University of Oklahoma College of Medicine, Oklahoma City, OK

10.1136/jim-2021-SRMC.456

Case Report With the execution of expanded newborn screen (NBS) program nationwide, it is uncommon to see severe hyperammonemia associated with IVA. We present a seven-day-old boy with severe IVA complicated with hyperammonemia. This child was flagged by NBS at day 4, but due to COVID19 and parental skepticism, confirmatory testing was delayed and a leu restricted diet was not followed as instructed. The patient initially presented to the ED with Ammonia of 588 ug/dL which then increased to 1000 ug/dL. This child received carnitine, arginine, c argulic acid (Carbaglu), CRRT, and Ammonul. The Ammonul was not helpful. Ammonul has two major components sodium benzoate and sodium phenylacetate. Sodium benzoate functions by removing glycine with ammonia which could be harmful for this condition as IVA needs to bind to glycine as a rescue. Sodium phenylacetate binds to glutamine to remove ammonia but this patient’s plasma amino acid assay revealed a low glutamine level of 256 umol/L. The hyperammonemia was corrected in 15 hours, and with the use of Carbaglu there was no rebound of hyperammonemia. Our patient suffered from bone marrow suppression associated to the organic acidemia and required frequent multiple platelet transfusions and GCSF for neutropenia. The management of this patient provides supporting evidence of the many theoretic metabolic ‘facts’ including why Ammonul is not helpful in organic acidemias.

RECURRENT URINARY TRACT INFECTIONS: AN UNUSUAL PRESENTATION IN A NEONATE

M. Crowley*, E. A. Margolis, S. Farooq, M. Steinhardt. Tulane University School of Medicine, New Orleans, LA

10.1136/jim-2021-SRMC.457

Case Report Urinary tract infections (UTI) are rare in infants less than two months old. Incidence described in the literature is 0–1% in neonates less than three days old. The current American Academy of Pediatrics clinical practice guideline for initial UTI released in 2016 was written for ages 2–24 months, presenting a gap in the neonatal population. Findings consistent with UTI in the neonate include a positive urine culture and renal ultrasound showing pelviectasis or hydronephrosis. The objective of this case report is to identify an area of need for clinical guidelines in working up UTIs in infants less than two months old and supporting evidence to include urine culture and sensitivity in the work-up of unconjugated hyperbilirubinemia in neonates.

This is a case of a one day old full-term African American male admitted to the NICU for respiratory distress. His hospital course was complicated by respiratory distress, unconjugated hyperbilirubinemia, and recurrent E.coli UTIs, diagnosed on day of life 6 and 19. His initial presentation of UTI was a profoundly elevated bilirubin not adequately explained based on risk factors. He had normal CBCs and negative blood cultures. The initial urine culture was positive for E.coli and he was treated. His initial renal ultrasound showed no abnormalities. His second E.coli UTI presented with a positive urine culture and repeat renal ultrasound showed mild left pelviectasis. His VCUG was normal and he was discharged on Keflex prophylaxis. This patient followed up with Urology two weeks after discharge without any repeat UTIs. They recommended discontinuing Keflex and returning in 2 months for a renal-pelvis ultrasound.

This case highlights the importance of urine cultures in the work-up of unconjugated hyperbilirubinemia in the neonatal population when out of proportion to risk factors. It has been well documented that hyperbilirubinemia can be a sign of UTI in a neonate. It also demonstrates the need of having clear guidelines for working up UTIs in infants less than 2 months old. This case is especially interesting due to the timing of his initial E-coli UTI with resultant normal renal ultrasound. He also subsequently developed a recurrent UTI which then produced abnormal findings on repeat renal ultrasound.

EVALUATING EARLY TOTAL PROTEIN INTAKE AND IN-HOSPITAL GROWTH IN EXTREMELY LOW BIRTHWEIGHT INFANTS

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10.1136/jim-2021-SRMC.458

Purpose of Study Early growth in the postnatal period influences long-term neurodevelopmental and growth outcomes. Growth in length or linear growth is associated with increased lean mass and a more favorable body composition with less fat accretion. Improved linear growth is associated with a diet that provides adequate protein.

To compare the in-hospital growth of extremely low-birth weight (ELBW) infants stratified by protein intake by day of life (DOL).

Methods Used This is a secondary analysis of ELBW infants from a previous RCT. Detailed dietary intake was recorded for each infant. Infants were categorized into two cohorts: Group 1 received <4 grams/kg/day of dietary protein, combined intake from parenteral nutrition (PN) and enteral nutrition (EN), by DOL 5 and Group 2 received ≥4 grams/kg/day of protein by DOL 5. Primary outcomes included weight, length, and head circumference growth as well as length of stay.

Summary of Results A total of 56 infants were included in the analysis. There were no significant differences found in growth during hospitalization or length of stay (table 1). 52% of infants (29/56) received ≥ 4 g/kg/day of protein by DOL 5. When evaluating dietary protein intake at DOL 28, for every 1 g/kg/day increase in dietary protein, the predicted weight gain decreased by 1.7 gm/day (p=0.038).
Abstracts

<table>
<thead>
<tr>
<th>Abstract 458 Table 1</th>
<th>Infant characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group 1 (n=27)</td>
</tr>
<tr>
<td>Gestational age (wks)</td>
<td>27.48 ± 1.51</td>
</tr>
<tr>
<td>Birth Weight (g)</td>
<td>950 (885, 1060)</td>
</tr>
<tr>
<td>Male, n (% )</td>
<td>16 (59)</td>
</tr>
<tr>
<td>Highest Protein by DOL 5 (g/kg/day)</td>
<td>3.80 (3.46, 3.88)</td>
</tr>
<tr>
<td>Length of Stay (days)</td>
<td>76 (64, 102)</td>
</tr>
<tr>
<td>Weight gain (g/day)</td>
<td>21.39 (18.85, 26.20)</td>
</tr>
<tr>
<td>Weight (cm/Wk)</td>
<td>0.93 (0.69, 1.15)</td>
</tr>
<tr>
<td>FOC (cm/Wk)</td>
<td>0.73 (0.69, 0.77)</td>
</tr>
<tr>
<td>Medical NEC, n (%)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Surgical NEC, n (%)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Late-Onset Sepsis, n (%)</td>
<td>3 (11)</td>
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</table>

Mean ± standard deviation, *Median (interquartile range).

Conclusions ELBW infants who achieved ≥ 4 grams/kg/day of protein (PN+EN) by DOL 5 did not have improved in-hospital growth or decreased adverse outcomes. Increased dietary protein at DOL 28 was associated with decreased weight gain, which may reflect increased protein provision to more fragile, sick infants in an effort to improve growth.

459 CONGENITAL RENAL TUBULAR DYSPLASIA WITH PULMONARY HYPOPLASIA, PERSISTENT HYPOTENSION AND HYOCALVARIA AFTER CHRONIC IN-UTERO EXPOSURE OF ANGIOTENSIN-II RECEPTOR BLOCKER

KE Fogle*, RA Blake, RD Smalligan, J Gilbert. UAB-Huntsville, Huntsville, AL

Case Report Angiotensin-II Receptor Blocker (ARB) has been frequently used to control pre-conception hypertension in child-bearing age women. ARB is one of the Renin-Angiotensin-System (RAS) blocker agents besides Angiotensin Converting Enzyme Inhibitor (ACE-I). ARB interferes with fetal RAS role in prenatal renal development. Disruption in fetal nephrogenesis affects fetal renal function, anuria, oligohydramnios, pulmonary hypoplasia and pulmonary arterial hypertension. Few literatures reported risk of skull-ossification defects, limb contractures, intrauterine growth retardation, spontaneous abortion, postnatal hypotension and postnatal death. ARB has been associated with more severe fetopathy. Duration and/or timing of in-utero exposure and fetopathy remains conflicting. We presented a case of a term low-birth weight newborn with very limited prenatal care and limited prenatal history who presented with respiratory distress syndrome, bilateral pneumothorax, hypocalvaria, refractory hypotensive, pulmonary hypertension, oliguric, elevated kidney function and early postnatal death. Reviewed of maternal medication history showed chronic maternal medication. Autopsy histopathology report confirmed features of renal tubular dysplasia, pulmonary hypoplasia and hypocalvaria. Placenta pathology demonstrated sign of oligohydramnios. Early recognition of ARB associated postnatal symptoms are important for clinicians to investigate for fetal teratogenic exposure. Teratogenic effects of ARB may be reversible if medication is discontinued at second and third trimester. Medication counselling for reproductive age women and/or newly pregnant women are essential to eliminate fetopathy secondary to maternal medication.

460 ANNULAR PANCREAS IN A NEWBORN

KE Fogle*, RA Blake, RD Smalligan, J Gilbert. UAB-Huntsville, Huntsville, AL

Case Report A 1-day old girl was transferred to the NICU due to projectile emesis and feeding intolerance. Baby was born via SVD at 37 weeks via surrogate. APGARS were 9 at 1 min and 9 at 5 min. Vitals: T 37.1, HR 164, RR 59, BP 41/34, weight 2.66 kg, length 49.5 cm. Patient was alert, lungs: clear, heart: RRR, adb: not distended, no mass and hypoactive bowel sounds. Labs: WBC 29k, pH 7.5, pCO2 24, HCO3 19, Cr 1.2, lactate 4.8. KUB showed ‘double bubble’ sign. Upper GI: high-grade duodenal obstruction, favoring a duodenal web due to presence of distal bowel gas. Surgical repair of suspected duodenal atresia was undertaken on day 3 of life however intra-operatively, annular pancreas was discovered. A duodenostomy was performed to bypass the annular pancreas. She was discharged from the NICU on post-op day 15 and on t/u was eating and gaining weight appropriately.

Discussion Annular pancreas is a rare congenital defect characterized by a loop of pancreatic tissue encircling the 2nd part of the duodenum. In normal development, the ventral bud of the pancreas rotates with the duodenum, passing behind the duodenum to fuse with the dorsal bud. In annular pancreas, the ventral bud fails to rotate with the duodenum and instead encircles the duodenum.

Although rare, annular pancreas is important to keep on the differential when a newborn presents with feeding intolerance, non-bilious emesis, or pyloric stenosis. Both prenatal ultrasound and the newborn abdominal X-ray often show the ‘double bubble’ sign which narrows the differential, but cannot definitively diagnose annular pancreas.

As in our case, annular pancreas is sometimes diagnosed intra-operatively. Once diagnosed it is important to evaluate for other congenital defects, as the prognosis largely depends on what, if any, other congenital defects are present. It can be associated with chromosomal abnormalities (most often Trisomy 21), congenital heart disease, malrotation, duodenal/ esophageal atresia, biliary atresia, anorectal malformations, or renal abnormalities. If annular pancreas is diagnosed or suspected prenatally, it allows for planned management at a facility that has appropriate neonatal and surgical care. Our patient had no associated comorbidities and is expected to do well.

461 A CASE OF RUPTURED OMPHALOCELE, PATENT OMPHALOMESENTERIC DUCT, AND THE CONNECTION BETWEEN THEM

R Gaini*, Z Murrell. UAB-Huntsville, Huntsville, AL

Case Report A twin male born at 34 3/7 weeks gestation was diagnosed with gastrochisis in utero. An omphalcele was initially suspected by the primary obstetrician, but when the patient was evaluated by the maternal fetal medicine specialist, a diagnosis of gastrochisis was made due to the presence of free-floating intestines on fetal ultrasound. On presentation to the NICU, abdominal exam demonstrated herniated small and...
large bowel with inflammatory peel and thickening. Notably, the herniation was positioned in the midline at the base of a ruptured omphalocele sac. Moreover, a fistula was observed between the omphalocele sac and a patent omphalomesenteric duct.

**Discussion** Gastrochisis is a herniation of free-floating abdominal contents through the abdomen, usually to the right of the midline. Omphalocele is a herniation of abdominal contents surrounded by a sac through the abdomen at midline, just inferior to the umbilical cord. Our patient was initially diagnosed with gastrochisis in utero due to free-floating viscerum on ultrasound. However, gross examination revealed presence of a sac and a midline location of the herniation. Rupture of the omphalocele sac caused exteriorization of the intestines characteristic of gastrochisis on imaging, which in turn led to a misdiagnosis. Therefore, the diagnosis was appropriately modified to ruptured omphalocele. This distinction is important clinically, because only omphalocoeles are associated with extraintestinal abnormalities and may warrant additional clinical investigations, such as echocardiogram and renal ultrasound.

Our patient also had a patent omphalomesenteric duct (OMD) with the orifice to the right of the omphalocele sac. To our knowledge, less than five cases of this presentation have been reported in the literature. An important consideration is that such a connection could have contributed to rupture of the omphalocele sac, though this remains unconfirmed. To resolve this patient’s complications, operative resection of the patent OMD was performed. Next, the herniated bowels were placed in a silo in preparation for delayed closure of the defect.

**Case Report** We report an unforeseen case of 22q11.2 deletion syndrome (DS) in an infant with multiple gastrointestinal (GI) anomalies and a congenital diaphragmatic defect. First, this female neonate was diagnosed with a low-type imperforated anus with rectoperineal fistula. Dilations of the rectal fistula were initiated and subsequently, the patient exhibited a normal pattern of bowel movements. However, the infant had persistent feeding difficulties which led to an upper GI series which showed a partial duodenal obstruction. This obstruction was secondary to the presence of annular pancreas. In addition, this infant had a right anteromesial Morgagni diaphragmatic hernia which presented as a mid-lung opacity on plain chest x-ray and was later confirmed by a CT scan of the chest. A 5 mm perimembranous ventricular septal defect (VSD) was also detected by an echocardiogram. Except for the VSD, this patient had none of the commonly described features of 22q11.2 DS such as cleft palate, thymic hypoplasia, hypocalcemia, and ear anomalies. Initially, a VACTERL association was suspected. However, due to the presence of additional anomalies that did not belong to the VACTERL association, cytogenomic microarray analysis was performed. It showed an interstitial deletion involving chromosome 22, with a size of 2.5 Mb within 22q11.21, with only one copy present. This is the first documented case of 22q11.2 DS with a rare association of multiple thoracoabdominal defects and a lack of commonly encountered features associated with this common microdeletion.
Abstract 464 Figure 1 Pneumatosis intestinalis

Case A NAS neonate born to an active heroin user requiring antibiotics for suspected sepsis as well as high flow nasal cannula for respiratory distress has bright red blood in stool on day 10 of life, which was initially attributed to milk protein allergy. At day 13, the blood acutely worsened. Stat XR revealed necrotizing enterocolitis with pneumatosis intestinialis. Broad spectrum antibiotics were started. Neonate was made NPO with NG tube and was transferred to closest NICU.

Discussion This case illustrates the importance of knowing the risk factors for NEC recognizing the disease early, and anticipating complications in the rural setting to allow for prompt transfer to higher acuity of care. As rural physicians, it is of the utmost importance to recognize deadly diseases promptly as our facilities often do not meet the acuity of care needed. This case discusses several risk factors outside of preterm delivery that should cause the physician to consider necrotizing enterocolitis as a diagnosis. It will also discuss how to stabilize the patient in the rural setting in anticipation for NICU transfer.

Abstract 465 EOSINOPHILIC MYENTERIC GANGLIONITIS PRESENTING AS NEONATAL HIRSCHSPRUNG’S DISEASE: A CASE REPORT

C Manjunath*, C Galliani, K Crissinger, F Eyal. University of South Alabama, Mobile, AL

10.1136/jim-2021-SRMC.465

Case Report Eosinophilic mesenteric ganglionitis (EMG) is a rare cause of chronic intestinal pseudo-obstruction characterized by eosinophilic infiltration of the Auerbach myenteric plexus. Few cases have been reported in the pediatric population but none has been reported in the neonatal age group. This case report describes a newborn infant who clinically presented as possible Hirschsprung disease.

A 3-day old term female child was transferred for concerns of bowel obstruction with clinical features of abdominal distension, bilious vomiting, absent bowel movement since birth. The upper gastrointestinal series were suspicious of malrotation. Surgical exploration showed a diffusely dilated small bowel and colon (proximal to the splenic flexure). The appendix and cecum were present in the right upper quadrant. The ligament of Treitz was located in the midline with high-riding cecum. No volvulus was noted. The colon appeared small distal to the splenic flexure which was compatible with Hirschsprung disease. Multiple full-thickness biopsies were obtained from different regions. An ileostomy and mucous fistula were created. Histopathological analysis showed the presence of ganglion cells and no nerve hypertrophy was seen in the biopsy specimens, thus excluding Hirschsprung disease. Eosinophilic myenteric ganglionitis was seen in the hepatic flexure biopsy but was not present in all the biopsy samples. The patient was treated with a 100% amino acid-based formula and had ileostomy takedown at 2.5 months of age without complication or recurrence of symptoms.

In the vast majority of reported cases, there was a lack of clinical improvement in dysmotility despite 3 months of elemental formula usage as a result, steroid treatment was initiated in almost all cases. Our patient had complete spontaneous resolution of symptoms with slow treatment with 100% amino acid formula and thus did not require steroid therapy. This unusual successful conservative management shows the possible cure with 100% amino acid formula only or this may be related to the focal nature of EMG.

Abstract 466 THE IMPACT OF PREMATURITY ON FALSE POSITIVE NEWBORN SCREENING RESULTS

S Nandam*, P Hillman, TO Findley. The University of Texas Health Science Center at Houston John P and Katherine G McGovern Medical School, Southlake, TX

10.1136/jim-2021-SRMC.466

Purpose of Study Newborn screening (NBS) is a federal program to screen newborns for congenital disorders where early detection is critical for improving long-term outcomes. The interpretation of screening results is based on term newborns. Due to the differences in physiology and underlying illnesses between preterm and term infants, these parameters may be inaccurate for preterm infants. This study aims to understand the impact of birth weight (BW) and gestational age (GA) on two serial NBS in the premature population.

Methods Used A single-center retrospective review was conducted on patients admitted to a Level IV neonatal intensive care unit (NICU) from 2008 to 2018. NBS results and reported confirmed diagnoses were obtained in collaboration with the Texas Department of State Health Services. Deidentified clinical data were accessed from the Vermont Oxford Network. Preterm infants (< 36 weeks GA at birth) with results from two NBS were included in the analysis. The percentage of patients with false positive results (FPR) were calculated across serial screenings, stratifying patients by birth weight and gestational age separately. Given that the newborn screen is a panel of tests, the FPR were calculated based on the number of patients with an abnormal result for at least one disease. A Pearson χ² test was performed to evaluate the FPR between GA and BW subgroups.

Summary of Results The study population included 4123 preterm infants with a median GA of 31 weeks (IQR = 28 – 33 weeks) and a median BW of 16323 g (IQR = 936.25 – 413 – 685

J Investig Med 2021;69:413–685
2348.75 g). Patients were stratified separately by GA (<28, 28–30, 31–33, >34 weeks) and BW (<1000, 1000–1499, 1500–1999, 2000–2499, >2500 g). The highest FPR for the first and second NBS were reported in neonates < 28 weeks (64.75% and 55.88% respectively) and <1000 g at birth (62.35% and 56.82% respectively). The FPR decreased with increasing GA and BW across both screens and improved in all subgroups on the second NBS (p < 0.001).

**Conclusions** The FPR decreases with increasing GA and BW and with serial screening (NBS2). Our results demonstrate that prematurity and/or low BW influence the rate of false positive NBS. In addition, later screens are more accurate for premature infants and supports a wait-and-watch strategy if the first NBS is abnormal.

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**467 SEVERE NEONATAL PRESENTATION OF BECKWITH-WIEDEMANN SYNDROME WITH REFRACTORY HYPOGLYCEMIA, BONY ABNORMALITIES AND AGENESIS OF THE CORPUS CALLOSUM**

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**Case Report** Beckwith-Wiedemann Syndrome (BWS) is an overgrowth disorder resulting from alterations of chromosome 11p15. BWS can present as a broad clinical spectrum that varies in severity. Classic features include macrosomia, macroglossia, abdominal wall defects, visceromegaly, hemihypertrophy, neonatal hypoglycemia, and an increased risk of the development of childhood embryonal tumours. We present the case of a female infant with many of these features who was diagnosed with BWS by methylation panel.

The infant was born at 33 1/7 weeks to a 16 year-old gravida 1 mother. Prenatal care was inconsistent and with history concerning for pre-eclampsia, elevated alpha fetoprotein, and bony abnormalities. At delivery, the infant was noted to have an unusually long and coiled umbilical cord with multiple nodules which has classically been associated with BWS. She was intubated due to respiratory distress and transferred for multidisciplinary evaluation and management.

She had multiple dysmorphic features including an asymmetric chest wall, hepatomegaly, and an abnormal umbilicus (eventually diagnosed as omphalocele). Initial evaluation was remarkable for refractory hypoglycemia, anemia, and thrombocytopenia. Skeletal survey showed osteolucency lesions of the right tibia and multiple ribs. Neuroimaging revealed agenesis of the corpus callosum. Following an initially normal genetic evaluation with microarray and very long chain fatty acids, a methylation panel revealed hypermethylation at imprinting center (IC) 1 (H19) and hypomethylation at IC2 (LIT1), ultimately diagnosing BWS. The infant’s clinical course was complicated by prolonged need for mechanical ventilation, feeding difficulties, hypoglycemia requiring treatment with diazoxide and increased glucose infusion rates, and severe anasarca and renal failure. On day of life 60, her family made the decision to withdraw care and she died shortly after removal of mechanical ventilation.

This case is unique both in the severity of presentation with significant hyperinsulinaemia and death in the neonatal period as well as the findings of corpus callosum agenesis and bony fibrous dysplasia which have only rarely been reported in the literature in association with BWS.
Coat-Hanger sign, first introduced by Offiah et al. (2003) is pathognomonic for KOS. In 2011, Miyazaki et al. introduced ‘Coat Hanger Angle’ (CHA), an objective method to determine coat-hanger sign. CHA > 25 should raise a suspicion for KOS and must be confirmed by methylation studies.

KOS consists of UPD(14)pat and UPD(14)pat-like syndromes caused due to epimutations and microdeletions affecting maternally derived 14q32.2 imprinted region. Described mostly in Asian/European patients, they present with a typical phenotype characterized by facial appearance, small bell-shaped thorax, abnormally shaped ribs and developmental delay. Most patients have hypotonia and respiratory distress at birth requiring respiratory support. Feeding difficulties are common.

Given poor prognosis associated with KOS, after discussion with mother, life-sustaining support was discontinued.

**Neurology and neurobiology**

Joint plenary poster session
4:30 PM

Thursday, February 25, 2021

**ARTERY OF PERCHERON STROKE**

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Case Report A 62-year-old female with no known PMH is admitted to the ED due to altered mental status for several hours’ duration. She was somnolent, dysarthric and hypertensive with a blood pressure of 168/94 mmHg. On neurological exam, the patient had a Glasgow Coma Scale (GCS) of 12 points, disoriented with non-fluent speech, following some commands, otherwise no other abnormalities were found. The laboratory workup at admission was normal. Emergency CTA of head and neck reported no acute abnormality. A 12-lead EKG, chest X-ray, and carotid and vertebral Doppler ultrasound were performed, all of them reported normal. Magnetic resonance imaging of the brain showed bilateral thalamic hyperintensities in T2, fluid-attenuated inversion recovery, and diffusion-weighted imaging sequence. The patient was discharged four days later with improving symptoms.

A stroke in AOP should be suspected in all patients with symptoms of interrupted blood supply in the vertebrobasilar territory. The diagnosis primarily depends on clinical features; patients with paramedian bilateral thalamic lesions may
Case Report

Central Pontine myelinolysis (CPM) is a condition that has been described in a case of chronic alcohol dependence and rapid correction of hyponatremia. CPM primarily occurs with the rapid correction of hyponatremia.

We are reporting a case of CPM that is not related to the rapid correction of hyponatremia.

A 50-year-old female with a history of alcohol dependence. The patient apparently had an episode of a generalized tonic-clonic seizure. She has a history of chronic headaches and no prior seizure attacks. She drinks intake hard alcohol daily. Physical examination revealed a low BMI of 17 with an unremarkable pulmonary and cardiovascular examination. Neurological examination revealed initial confusion that resolved after her first day, normal cranial nerves, motor & sensory function, and normal cerebellar exam.

Neuroimaging with an initial Computerized Tomography (CT scan) of the brain that was done at the time of presentation revealed central pontine demyelination, which was a new finding compared to imaging done three months ago. The patient was also found to have hyponatremia that was deemed chronic due to alcohol dependence. However, brain imaging with a CT scan was performed before receiving any treatment.

The patient did not have any neurological deficits throughout her hospital stay. Hence a confirmatory Magnetic Resonance (MR) imaging was done which revealed a 1 × 1.5 pontine area of demyelination. The seizure was attributed to alcohol withdrawal, and the patient received benzodiazepines and nutritional support.

Discussion CPM was first described by Adams and colleagues in 1959 as a disease affecting alcoholics and malnourished. It is an inflammatory, demyelinating condition, primarily described in those with chronic alcoholism and in malnourished patients. The CPM primarily occurs with overly rapid correction of severe hyponatremia. However, some patients are at high risk and can develop this syndrome at higher baseline plasma sodium concentrations and lower rates of correction. Despite this, CPM is unlikely to occur spontaneously without any attempts to correct hyponatremia.

Conclusion The clinician needs to be vigilant for central pontine demyelination in alcoholic patients. Especially if they are heavy alcohol users along with nutrition deficiency and poor oral intake.
A RARE CASE OF PONTOCEREBELLAR HYPOPLASIA TYPE 1B


10.1136/jim-2021-SRMC.474

Case Report A full-term female newborn was admitted to NICU for hypotonia. Infant was conceived via in vitro fertilization and followed by maternal fetal medicine with an unremarkable prenatal course. Physical exam was significant for overriding sutures, displaced small anterior fontanelle, axial hypotonia, extremity hypotonia and slow deep tendon reflexes. An MRI brain showed a large cisterna magna, cerebellar hypoplasia with majority of the cerebellar vermis present, suggesting a possible Dandy Walker variant (cerebellar vermis hypoplasia). A CT head was also done to rule out craniosynostosis, however only showed areas of close approximation of coronal sutures and no synostosis. She was seen by Neurology who recommended a chromosomal microarray which was normal.

After discharge from NICU, her neurological status steadily declined, resulting in poor motor function and poor suck despite regular physical therapy, occupational therapy, and speech therapy. By 3 months of age she developed failure to thrive and dysphagia, for which she required gastrostomy tube placement for feeding. At follow-up with Neurology, she was noted to have progressive microcephaly, profound hypotonia, areflexia, and nystagmus. A repeat MRI showed worsening atrophy and increasing ventriculomegaly. By 9 months of age she developed respiratory failure, required a tracheostomy and remained since ventilator-dependent.

Genetics was then consulted and recommended brain malformation genetic panel. Patient was found to be heterozygous for two pathogenic variants in the EXOSC3 gene: c.155delC and D132A, which is consistent with a diagnosis of autosomal recessive pontocerebellar hypoplasia type 1B. Mother was found to be heterozygous carrier of the c.155delC pathogenic variant, while father was a heterozygous carrier for D132A variant, which confirms that the two variants are present on opposite alleles.

Pontocerebellar hypoplasia (PCH) describes a rare group of 11 neurodegenerative disorders that are typically seen prenatally or shortly after birth. PCH1 is characterized as a combination of pontocerebellar hypoplasia and spinal muscular atrophy, with patients presenting with muscle weakness and global developmental delay. An increased understanding of PCH1 will lead to better care and counseling for patients and families.

PROGRESSIVE RESPIRATORY FAILURE DUE TO ANTERIOR SPINAL CORD INFARCTION IN AN ADOLESCENT BOY

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10.1136/jim-2021-SRMC.476

Case Report Spinal cord infarction due to the occlusion of anterior or posterior spinal arteries is a rare medical emergency in pediatrics. One day before admission, a 15-year-old male (BMI 19) developed weakness in all four extremities around 30 minutes after finishing a hiking trip. He had neck pain, numbness in his limbs, and an episode of vomiting overnight.

The next morning, he was brought to the emergency room and was promptly intubated due to respiratory failure. He had a spontaneous eye opening and responded with head shake. Cranial nerves were intact except for sympathetic ganglia: pupils were equal and sluggishly reactive, miotic measuring 2 mm with miosis persisting in darkness. All four extremities were flaccid. He was able to hold his left leg against gravity but no movements on right. He had intact position sense, vibration, and fine touch sensation in lower and upper extremities (posterior spinthalamic tract). Pain (pinprick) and temperature sensation were absent in upper and lower extremities (lateral spinothalamic tract). Deep tendon reflexes were present without Babinski signs.

HYPERSOMNIA AS A RARE PRESENTATION OF NEUROMYELITIS OPTICA

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Case Report Rare causes of hypersomnia in adolescents include narcolepsy, autoimmune encephalitis, and neuromyelitis optica spectrum disorders (NMOSD). NMOSD are central nervous system inflammatory disorders associated with immune related demyelination of the optic nerves and spinal cord distinct from multiple sclerosis (MS) as they are associated with positive Aquaporin 4 IgG (AQP4).

A 17-year-old African-American male presented with excessive daytime sleepiness for six weeks. He had difficulty staying awake through routine day-time activities. He had associated headache and intermittent blurred vision. On examination, he was healthy, engaging, and answered questions appropriately but repeatedly fell asleep. He was easily arousable but had short-term memory gaps when recalling the conversation. His vision was normal. Comprehensive laboratory evaluation including CBC, CMP, CRP, ESR, and hormone profile were normal. Autoimmune and toxicology screens were negative. MRI of the brain showed a hyperintense signal in the hypothalamus concerning for malignancy for which dexamethasone was initiated. EEG and sleep study were negative. A paraneoplastic CNS syndrome was suspected but a CT scan of the neck-chest-abdomen-pelvis, along with negative tumor markers ruled-out occult malignancy. Serum paraneoplastic autoantibody panel (anti-Ma, anti-Ta, anti-Ri, Anti-Yo, anti-Hu, anti-CV2, antiampihysiphin) was negative.

CSF analysis had normal glucose and protein and was negative for HSV, AFP, BHCG. Antibody panel in the CSF was negative. Considering autoimmune encephalopathy, a second CSF analysis detected positive AQP4-IgG confirming the diagnosis of NMOSD. A second neuronal antibody NMDA-R-IgG in CSF, associated with NMDA-R encephalitis was identified. Treatment with Rituximab quickly improved his hypersomnia.

History of hypersomnia in the presence of focal CNS findings affecting the hypothalamus should raise concerns for NMOSD. This case showcases a rare etiology of somnolence as an atypical presentation of AQP4-IgG NMOSD associated with the unusual presence of NMDA-R-IgG.
Cervical MRI showed increased T2/STIR and decreased T1 signal of the anterior spinal cord from C3 to C7. A computed tomographic angiogram of head and neck showed no vascular abnormalities. Brain MRI was normal. Four days later spinal cord MRI showed restricted diffusion of anterior spinal cord consistent with anterior spinal artery syndrome. The workup for infection, thrombosis, and cardioembolization were all negative. The patient was placed on aspirin and low molecular weight heparin prophylaxis. He was extubated after three weeks and eventually transferred to a rehabilitation facility.

We postulate that our present patient suffered from fibrocartilaginous emboli from the nucleus pulposus to spinal cord vessels. It can be associated with even minor trauma, minor falls, lifting efforts, sudden movement, and prolonged or forced position. The axial loading forces on the spinal cord lead to increased intradiscal pressure and fibrocartilaginous emboli could reach the spinal cord vasculature by the arterial retrograde route.

### Case Report

**Stroke workup, even for patients outside the window for acute intervention, is crucial for identifying and caring for patients with stroke. Occasionally, workup leads to the discovery of more dire issues requiring urgent intervention.**

A 50-year-old right-handed male initially presented with right-sided facial droop and expressive aphasia for 48 hours. Physical exam was remarkable for mild-moderate aphasia, anisocoria (right>left), right facial weakness, and his initial NIHSS was 2 for mild aphasia and right facial droop. CT head showed acute ischemia in the insula of the left MCA territory. CTP showed a sizeable ischemic penumbra throughout the left MCA territory. CTA showed a left M2 MCA complete occlusion and an incidental finding of a large volume thrombus within the proximal aorta occluding 50% of the ascending thoracic aorta extending into the aortic arch. This raised concern for a mural thrombus or a thrombosed type A dissection. He was initially evaluated for thrombectomy of the left MCA occlusion to then be followed by aortic thrombus removal and arch repair. The patient was found to be neurologically stable at normotension. The decision was made to forgo thrombectomy in favor of ascending aorta transverse arch replacement, which was performed under deep hypothermic circulatory arrest (cooled to 16 degrees Celsius, systemic blood pressure <120 and heart rate <60) for 13 minutes with retrograde cardioplegia. During the procedure, a fungating mass was removed from the ascending aorta, which pathology later confirmed to be a 3.7 × 3.7 × 1.8 cm hemorrhagic thrombus. Sedation was weaned off post-op day two, and the patient was noted to have neurologic improvement with resolution of his right facial droop. The patient continued to improve neurologically, and was eventually discharged on secondary stroke prevention medication alone.

In this interesting case the patient’s cerebral infarct did not worsen despite limiting cerebral perfusion during the aortic arch replacement surgery. This case joins 9 similar cases found where the patients with stroke-like symptoms and aortic thrombus were treated with clot removal combined with deep hypothermic circulatory arrest. Each of these cases ended favorably for the patients who all showed improvement in stroke symptoms following the procedure.

**CARDIAC SURGERY ON STROKE PATIENT WITHOUT WORSENING OF SYMPTOMS**

NB Helmstetter*, EA Brew. Louisiana State University Health Sciences Center, New Orleans, LA

10.1136/jim-2021-SRMC.477

Case Report Stroke workup, even for patients outside the window for acute intervention, is crucial for identifying and caring for patients with stroke. Occasionally, workup leads to the discovery of more dire issues requiring urgent intervention. A 50-year-old right-handed male initially presented with right-sided facial droop and expressive aphasia for 48 hours. Physical exam was remarkable for mild-moderate aphasia, anisocoria (right>left), right facial weakness, and his initial NIHSS was 2 for mild aphasia and right facial droop. CT head showed acute ischemia in the insula of the left MCA territory. CTP showed a sizeable ischemic penumbra throughout the left MCA territory. CTA showed a left M2 MCA complete occlusion and an incidental finding of a large volume thrombus within the proximal aorta occluding 50% of the ascending thoracic aorta extending into the aortic arch. This raised concern for a mural thrombus or a thrombosed type A dissection. He was initially evaluated for thrombectomy of the left MCA occlusion to then be followed by aortic thrombus removal and arch repair. The patient was found to be neurologically stable at normotension. The decision was made to forgo thrombectomy in favor of ascending aorta transverse arch replacement, which was performed under deep hypothermic circulatory arrest (cooled to 16 degrees Celsius, systemic blood pressure <120 and heart rate <60) for 13 minutes with retrograde cardioplegia. During the procedure, a fungating mass was removed from the ascending aorta, which pathology later confirmed to be a 3.7 × 3.7 × 1.8 cm hemorrhagic thrombus. Sedation was weaned off post-op day two, and the patient was noted to have neurologic improvement with resolution of his right facial droop. The patient continued to improve neurologically, and was eventually discharged on secondary stroke prevention medication alone.

In this interesting case the patient’s cerebral infarct did not worsen despite limiting cerebral perfusion during the aortic arch replacement surgery. This case joins 9 similar cases found where the patients with stroke-like symptoms and aortic thrombus were treated with clot removal combined with deep hypothermic circulatory arrest. Each of these cases ended favorably for the patients who all showed improvement in stroke symptoms following the procedure.
of renal cell carcinoma (RCC), especially in the absence of urological manifestations. We herein report a case of a 71-year-old male who presented with two months of worsening dysphagia, dysphonia, weight loss, and binocular diplopia in the absence of flank pain and hematuria. The diagnosis of MG was confirmed with serologic evidence of 29 nmol/L of acetylcholine receptor binding antibodies and 46% acetylcholine blocking antibody. Subsequently, the patient began plasmapheresis and his neurological function improved. A CT chest was conducted to assess for evidence of a thymoma and incidental revealed a heterogeneous left renal mass. Follow-up CT abdomen and pelvis demonstrated an exophytic mass within the superior pole of the left kidney. Pathologic reports confirmed clear-cell variant RCC. Through reporting this case, we hope that increased awareness of this association may provide opportunities for early detection of renal malignancy. This rare association is evidence that atypical manifestations of RCC exist and can lead to diagnostic difficulty and delayed treatment.

FROM STREP TO STROKE: EMBOLIC STROKE AS AN UNUSUAL CONSEQUENCE OF MITRAL STENOSIS

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Case Report A 65-year-old female was admitted following four days of right-sided weakness and facial droop after sustaining a fall. No head trauma or syncope occurred. At presentation, she denied chest pain, seizures, leg swelling, fever, or palpitations. Past medical history included type 2 diabetes mellitus, hypertension, hyperlipidemia, and endometrial cancer status post hysterectomy. Family history was significant for a brother with rheumatic heart disease (RHD) and atrial fibrillation.

MRI of the brain revealed multiple small areas of acute infarction scattered throughout the cerebral hemispheres and brainstem. Carotid Doppler was unrevealing. TEE revealed thickening of the posterior leaflet of the mitral valve consistent with mitral stenosis. The left atrium was moderately enlarged without thrombi. Telemetry showed no evidence of atrial fibrillation. Whole body CT was not suggestive of metastatic disease. Hypercoagulability work-up was unremarkable. Patient was discharged on apixaban, high-dose statin, and with a 30-day cardiac event monitor, and a follow up with a cardiologist.

Her multiple disseminated infarcts led to embolic stroke being high on the differential. No obvious embolic source was found. The likely embolic source is due to mitral stenosis leading to left atrial enlargement and subsequent paroxysmal atrial fibrillation.

RHD is an uncommon cause of mitral stenosis in the US. The mitral valve is involved in approximately 90% of cases of RHD. The disease occurs due to the cross-reactivity between Streptococcus pyogenes antigens and valve tissue, eventually leading to fibrin deposition and disruption of normal valve function. The prevalence of RHD has decreased significantly during the past several decades due to the availability of rapid antigen tests and use of preventative antibiotics.

This case presents an unusual complication of untreated mitral stenosis secondary to RHD. Mitral stenosis, while uncommon in the US, should be considered as part of the differential for embolic stroke, especially in patients with regional or family history.
the operating room (OR) for a left-sided external ventricular drain (EVD) placement and craniotomy for evacuation of the brain abscess, right cortical mastoidectomy, and right tympanostomy tube placement. On hospital day 9, the patient was septic with blood cultures positive for S. intermedius. He was eventually discharged on intravenous ceftriaxone therapy for six to eight weeks. 31 days after hospitalization with multiple OR procedures. He has a follow-up with neurosurgery for a rapid MRI scheduled for six weeks after discharge. A discussion of this case may assist physicians and patients in earlier recognition and treatment of atypical cases of mastoiditis with Streptococcus intermedius in which there are minimal preceding symptoms or acute presentation as sudden-onset syncope. As many patients may not present with mastoid swelling, there should be a high index of suspicion in patients with ‘picket fence’ fever, vomiting, and drowsiness. The etiology of the initial mastoiditis for this patient remains unknown.

482 A CASE OF TRANSIENT GLOBAL AMNESIA IN A 48 YEAR OLD FEMALE
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10.1136/jim-2021-SRMC.482

Case Report Transient global amnesia (TGA) is an uncommon and poorly understood syndrome that results in sudden, self-limiting anterograde amnesia, sometimes with a retrograde component. Case A 48-year-old woman with no significant past medical history presented to the Emergency department with altered mental status for 1 day. Her family reported she had new issues with short term memory. The patient was still able to recall old memories and was able to recognize family members. They denied any witnessed seizure-like activity, weakness, facial droop, bowel or bladder incontinence. On physical exam, her vitals were normal. The patient was alert and oriented to person and place, but not time or situation. Her neurological exam was normal apart from the MMSE in which she was unable to recall 3 items after 5 minutes. Labs were overall unremarkable. In the ED, the patient was stroke activated. Her NIHSS scale was 0; tPA was not given due to suspected cause other than acute ischemic stroke. MRI showed a 0.5 cm acute lacunar infarct in the posterior left hippocampal formation. The patient’s symptoms resolved spontaneously over the next 24 hours. Transient global amnesia was suspected clinically.

Discussion Transient Global Amnesia occurs primarily in older adults between the ages of 50 and 80 years without discrimination of sex. During the affected time, patients can recognize self and family members but are unable to form new memories for the extent of the syndrome. Diagnostic criteria for TGA include: 1) The episode must be witnessed. 2) Anterograde amnesia must be present during the episode. 3) There should be no clouding of consciousness or loss of identity and cognitive impairment is limited to amnesia. 4) There should be no focal neurological symptoms during or after the episode. 5) There should be no features of epilepsy. 6) The episode must resolve in 24 hours. 7) The patient cannot have a recent head injury or active epilepsy. TGA is self-limiting - typically lasting 4 to 6 hours but can last up to 24 hours in some cases.

483 ADULT ONSET LEUKODYSTROPHY WITH RECURRENT HYPOTHERMIA
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10.1136/jim-2021-SRMC.483

Case Report A 52-year-old male with history of cerebral palsy, spastic quadriparesis, seizure disorder and hypothyroidism was brought by his mother for progressive weakness of his bilateral upper extremities and confusion for past 3–6 months and acute onset of cool extremities with temperature of 83°F at home. Review of system was otherwise negative. He was admitted with similar complaints and hypothermia 3 months back. On examination, he was found to have hypothermia (88°F). He was alert but not following commands, His motor strength was decreased in bilateral upper extremities (3/5 in right; 4/5 in left), had brisk reflexes and spasticity in all 4 extremities (left>right). Labs revealed WBC 3.2 (Ref: 4.5–11,000/ul) and thrombocytopenia 82,000 (Ref: 150–450,000/ul). TSH was normal. Infectious and autoimmune workup was negative. MRI brain demonstrated extensive gliosis/
leukomalacia in the frontoparietal white matter with associated volume loss and ex vacuo dilatation. (Figure 1) His clinical features, recurrent hypothermia and MRI brain findings led to the diagnosis of leukodystrophy.

**Discussion** Leukodystrophies are characterized by progressive demyelination commonly seen in childhood but adult onset, in 4th or 5th decade of life are rare. They may be associated with autonomic dysfunction as seen in our patient who had recurrent hypothermia. Genetic testing is essential, but MRI brain is also helpful. Unfortunately, there is no disease modifying therapy and treatment is mainly supportive.

**Conclusion** Adult onset leukodystrophy is rare and a high degree of suspicion must be maintained in patients with neurological symptoms unexplained by other causes.

**THE ARTERY OF PERCHERON: RAISING AWARENESS OF AN ATYPICAL STROKE PRESENTATION**

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10.1136/jim-2021-SRMC.484

**Introduction** The thalamus receives blood supply from posterior cerebral artery (PCA) branches. Bilateral thalamic stroke can occur due to occlusion of the proximal basilar artery or the artery of Percheron. In this anatomical variant, branching and feeding both thalami stretch from a single PCA instead of two, predisposing these patients to bilateral thalamic infarction.

**Case** An 88-year-old male presented in the ER after erratic behavior eventually led to unresponsiveness. He was somnolent and bradycardic, suspicious of a toxic-metabolic disturbance, but there was no response to naloxone. There were no acute intracranial findings on non-contrast head CT. The patient was admitted for further evaluation and MRI showed acute bilateral thalamic infarcts two days later. On day four, CTA showed focal stenosis in the left P1 PCA segment. Due to persistent somnolence the patient was started on modafinil to improve consciousness and glycopyrrolate for respiratory secretions. Atrial fibrillation was identified eight days later as a possible etiology. The patient then developed a pleural effusion due to aspiration pneumonia and was later transferred to the ICU for monitoring.

**Discussion** Bilateral thalamic infarction can mimic toxic-metabolic disturbance due to disruption of the reticular activating system, delaying acute stroke therapies such as tPA or mechanical thrombectomy. Additionally, without medical management of sleep-wake cycles, patients can aspirate due to airway instability. In those with altered mental status and vascular risk factors with no response to toxic-metabolic antidotes, stroke should remain high on the differential. Timely CTA could determine thrombectomy candidacy in basilar artery occlusions which present similarly with profound somnolence. Both tPA and thrombectomy are valuable for preserving brain tissue and improving functional outcomes in stroke patients. Even without these interventions, early recognition of bilateral thalamic stroke is important because aggressive use of therapies such as modafinil can improve patient alertness and reduce respiratory complications. Increased awareness of this atypical stroke presentation may lead to timely diagnosis and initiation of beneficial medical therapy early in patients’ hospital course, preventing life-threatening sequelae.

**COVID-19 INDUCED ACUTE BILATERAL OPTIC NEURITIS**

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10.1136/jim-2021-SRMC.485

**Case Report** Optic neuritis in adults is usually unilateral and commonly linked to multiple sclerosis. It usually occurs as sudden onset of visual loss associated with pain on eye movement. Diagnosis is usually clinical based on history and examination findings. Brain and orbital imaging such as MRI help in the diagnosis in most cases. After confirmation, treatment is usually straightforward.

A 44-year-old male patient with no past medical history presented with bilateral eye pain and vision loss. Two weeks prior to the onset, he had tested positive for COVID-19 virus. He was quarantined at his home and treated symptomatically with improvement. One week prior to his admission, he reported developing pain in his right eye that had progressed to his left eye along with worsening bilateral blurring of vision to the extent of complete vision loss. He denied any family history of neurological diseases. On examination, a global vision loss was noted in the right eye with acuity 20/200 along with relative afferent pupil area defect. Left eye’s vision was with a superior arcuate visual field defect and 20/30 acuity. Significant laboratory findings were ESR 37 mm/hr. Brain and Orbital MRI done with findings suspicious for bilateral optic neuritis, with associated enhancement and surrounding inflammatory changes. Lumbar puncture was done with nonspecific findings of cerebrospinal fluid (CSF) of glucose of 88 mg/dl and negative gram stain. No Oligoclonal bands were not detected. CSF cytology showed lymphocytes 90%. Myelin oligodendrocyte Glycoprotein (MOG) was detected with a titer of 1:160. Viral panel including EBV, HIV and CMV was negative. Lyme disease PCR not detected. Immunological panel including IgG, ANA, JO-1, Anti-NMO ab, SS-A, SS-B and were also negative. Nasopharyngeal SARS virus RNA PCR and serum SARS-CoV-2 IgG antibodies were detected. Patient was started on Methylprednisolone for a total of five days in which significant improvement was noticed.

We believe our patient’s infection with COVID-19 virus has triggered his immune system to present these findings. COVID-19 virus infection is causing a huge impact in the world as pandemic, its extent as clinical disease is still poorly understood and explained. Therefore, we share this interesting presentation to the world to add to the vast ways in which COVID-19 infection can present.

**TWINS WITH CONGENITAL LYMPHOCYTIC CHORIOMENINGITIS VIRUS INDUCED NEUROTROATROGENIC ENCEPHALOPATHY**

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10.1136/jim-2021-SRMC.486

**Case Report** Lymphocytic choriomeningitis virus (LCMV) shares with the Zika virus (ZV) its mode of transmission and tropism. Unlike virtually all other intrauterine infections (IUI), LCMV and ZV are transmitted transplacentally and disrupt fetal brain development with limited systemic symptoms, reflecting their strong selective neurotropism. Congenital LCMV remains underdiagnosed as clinical manifestations are predominantly neurologic. Awareness of congenital LCMV and
its typical neuroimaging features should increase its recognition. We report a set of dizygotic twin infants who presented at birth with severe microcephaly and mild intrauterine growth restriction. There was no hepatosplenomegaly and no dysmorphic feature. Neuroimaging showed intracranial calcifications in the subcortical white matter at the gray-white matter junction, along with cortical dysplasia and defective cerebral opercularization. There was reduced brain volume with ventriculomegaly, colpocephaly, and enlarged extra-axial subarachnoid space. There was thinning of the corpus callosum. We conclude that neuroimaging features of LCMV resemble those of congenital ZV and differ significantly from other IUI.

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DOPAMINE TRANSPORTER SPECT IMAGING DEMONSTRATES SELECTIVE NEURODEGENERATION OF CAUDATE/PUTAMEN IN HIV-AIDS PATIENT WITH AKINETIC PARKINSONISM

AV Varma-Doyle*, LA Branch, BJ Copeland. LSUHSC, New Orleans, LA

Case Report HIV affects the central nervous system as viruses enter via the blood brain barrier triggering an immune activation. CD8+ T cells are elevated in CSF of HIV patients within 1 year of exposure indicating early onset of neuroinflammation facilitating subsequent neurodegeneration. Functional imaging demonstrates altered metabolism in cortical/subcortical structures, global cortical atrophy and/or striatal neurodegeneration due to HIV envelope proteins being particularly toxic to dopaminergic neurons.

A fifty-nine-year-old daily-runner with medical history of HIV disease for > 10 years, presented with 1-year history of extremity stiffening, bradykinesia, and occasional hand rest tremors. On exam, he had masked facies, mild right upper extremity cogwheeling and decreased right arm swing, suggestive of parkinsonism. He was compliant with genvoya (elvitec-cob-emetri-tenof-Alafen150-150-200-10 mg) daily and viral load was undetectable. Vascular risk factors including LDL 41 mg/dl and Hba1c <6.5 showed good control. MRI brain demonstrated mild cortical atrophy with ex vacuo dilation of lateral and third ventricles, and microangiopathic ischemic changes; subcortical structures (basal ganglia) did not show vascular or structural changes. However, on dopamine transporter/SPECT brain imaging (DAT scan), diminished/absent activity was seen in the bilateral putamen and right caudate, indicating dopaminergic neurodegeneration. He was initiated on carbidopa/levodopa 25/100 mg orally three times daily and on follow-up, reported symptomatic improvement.

We report a HIV AIDS patient with > 10-year disease duration with mild akinetic-rigid type parkinsonism who responded to dopamine replacement therapy. Patient’s compliance with antiretroviral therapy, low viral load and vascular risk factor control protected him against advanced neurodegeneration. Early initiation of antiretroviral therapy protects against neurodegeneration but reduced cortical volumes are still seen with longer disease duration. Daily physical exercise additionally helped reduce symptom severity. We summarize the case, discuss utility of DAT scans and imaging findings in HIV-Parkinsonism and review ways to mitigate neurodegeneration in HIV-AIDS that can worsen quality of life in patients.

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NEUROSARCOIDOSIS WITH OCCULT SYSTEMIC MANIFESTATIONS

1AV Varma-Doyle*, D Neupert, S Perez. 1LSUHSC, New Orleans, LA; 2Tulane University School of Medicine, New Orleans, LA

The abstract text is about neurosarcoïdosis with occult systemic manifestations. It discusses the clinical features, diagnostic challenges, and therapeutic implications of this condition.
Case Report: Sarcoïdosis, an autoimmune disease due to enhanced Th1 response and inflammatory cytokine production leads to non-necrotizing granuloma formation and vasculitides. Neurological complications seen in approximately 5% of sarcoïd patients include spinal cord & brain parenchymal changes ranging from cauda equina syndrome, meningitis, seizures, strokes, cranial and peripheral neuropathies.

We present a patient with neuromyelitis optica with widespread systemic complications that often lie occult.

A 43-year-old man with no significant medical history was brought to our institution due to loss of movement in lower extremities, torso, and upper extremities with preserved sensation after having dived headfirst into a 3 ft pool five days ago. Cervical spine CT was eventful for severe multifocal stenosis with a lack of opacification of the lumen of the right vertebral artery in the P2 segment. Cervical-Thoracic Spine MRI portrayed fractures of C4. Arteriogram demonstrated complete occlusion and dissection of the left vertebral artery. Vital signs remarkable for bradycardia with MAP of 65 mmHg. Physical examination revealed intermittent painful spasticity of the lower extremities accompanied by a partially rigid, non-tender to palpation erection. After Urology Service examination ischemic/low-flow priapism was ruled out, for which Baclofen and Gabapentin were administered with full resolution of symptoms.

Although rare, non-ischemic priapism is not classified as a surgical urgency nor emergency; however, an initial workup is the same as low-flow/ischemic priapism. A cavernosal blood gas is done in order to assess and confirm arterial blood samples, lack of acidosis, and hypoxia. Color duplex ultrasound evaluates increased blood flow in the corpus cavernosa arteries with no obstruction in the outflow. 60% of patients will have spontaneous resolution. Medical therapy with Baclofen, a GABA receptor agonist, has shown to be useful in spinal spasticity, stuttering, and non-ischemic priapism, as seen in this case. This case illustrates the importance to identify priapism as an early sign of imminent spinal shock as well as management of non-ischemic priapism.

Case Report: Priapism is well known for being a prolonged and persistent erection associated with sexual stimulation or desire. Non-ischemic priapism presents as a partially or fully erect, non-tender erection as opposed to tender, complete erection seen in ischemic priapism. After a spinal cord injury, there is an acute loss of sympathetic flow below the level of the insult, leading to unopposed parasympathetic input and subsequent increase in arterial pressure of the corpora cavernosa causing a neurogenic priapism. We present a case of non-ischemic priapism in the setting of acute spinal cord injury.

A 43-year-old man with no significant medical history was brought to our institution due to loss of movement in lower extremities, torso, and upper extremities with preserved sensation after having dived headfirst into a 3 ft pool five days ago. Cervical spine CT was eventful for severe multifocal stenosis with a lack of opacification of the lumen of the right vertebral artery in the P2 segment. Cervical-Thoracic Spine MRI portrayed fractures of C4. Arteriogram demonstrated complete occlusion and dissection of the left vertebral artery. Vital signs remarkable for bradycardia with MAP of 65 mmHg. Physical examination revealed intermittent painful spasticity of the lower extremities accompanied by a partially rigid, non-tender to palpation erection. After Urology Service examination ischemic/low-flow priapism was ruled out, for which Baclofen and Gabapentin were administered with full resolution of symptoms.

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WHEN FUNCTIONAL ABDOMINAL PAIN GETS A LETHARGY AND POOR FEEDING DUE TO MALNUTRITION-INDUCED GASTROPARESIS IN THE SETTING OF NUTRITIONAL REHABILITATION

Case Report SS, a 9 year old female with history of Tetralogy of Fallot, depression, functional abdominal pain (FAP) presents to GI clinic after months of worsening abdominal pain. Pain is periumbilical and associated with frequent emesis and loose stools. No bloody stools or weight loss reported.

Work up: Primary Care Provider (PCP) conducted H. pylori testing, stool studies and celiac panel that were unrevealing. There was no response to cyproheptadine trial for worsening FAP, therefore patient underwent esophagogastroduodenoscopy (EGD). EGD was notable for 85 eosinophils per high powered field isolated to the duodenum. SS was started on PPI and SSRI with only mild improvement. She was referred to the Eosinophilic GI Disorders Clinic where an increasing peripheral eosinophilia was identified on CBC with 2288 absolute eosinophils. Strongyloides IgG antibody testing was negative. Patient was referred to Allergy clinic for evaluation. Basic immunodeficiency and environmental allergy workup were non-revealing, but Toxocara IgG was positive in addition to a low B12 level.

Treatment: Patient was referred to Infectious Disease who noted that toxocara antibody is typically an incidental finding and an asymptomatic disease process. However, in the setting of GI symptoms with biopsy-proven infiltration and low B12, there is concern for malabsorption. SS was prescribed Alben-dazole and referred to ophthalmology for potential ocular involvement and to cardiologist as Toxocara can lead to myocarditis.

Conclusion Patients with acute, sustained worsening of FAP require investigation for an alternative diagnosis. A PCP may initiate work-up, but it is appropriate to refer to GI if symptoms persist. A thoughtful stepwise approach in evaluation of acute worsening FAP does not necessitate a shotgun approach to lab work up in an otherwise stable patient. Visceral toxicarisis should be on this differential diagnosis when peripheral hypereosinophilia is present and as symptoms can include abdominal pain, cough, or wheezing. Patients’ symptoms and lab work dictate additional workup; prematurely anchoring is a strong risk factor in these presentations.
When he developed abdominal pain, imaging studies were obtained, which demonstrated gross gastric distention from solid material concerning for a bezoar. The Surgery team performed an exploratory laparotomy, during which a large collection of undigested food was removed. After discussion with the GI team, the patient was diagnosed with gastroparesis, deemed likely from his severe malnutrition with associated vitamin deficiencies.

Malnutrition-induced gastroparesis can be an occult complication in patients undergoing nutritional rehabilitation. Providers should monitor daily symptoms, weights, and serial exams closely as patients consume larger volumes of food with a low threshold to obtain abdominal imaging to ensure gastroparesis does not lead to adverse outcomes.

**Abstract 494**

**BIRTH TRAUMA MASQUERADING AS CHILD PHYSICAL ABUSE**

C Beeson*, L Conway. OU/TU School of Community Medicine, Tulsa, OK

10.1136/jim-2021-SRMC.494

**Case Report** Birth trauma is a common cause of injury in neonates that can be mistaken for abuse. Suspected abuse requires additional diagnostic workup and involvement of non-medical agencies. Neonates with concerning injuries present a diagnostic challenge for all medical providers.

A 29-day-old male born large for gestational age at 40 weeks gestation with a NICU stay for pulmonary and cardiac problems presented to the hospital with a fever of 105°F. Medical history included propranolol for supraventricular tachycardia. Physical exam indicated boggy swelling of the right parietal area. Septic workup included urinalysis which showed hematuria, elevated white blood cells, leukocyte esterase, and growth of extended spectrum beta lactamase *E. coli*, confirming sepsis secondary to pyelonephritis. X-ray imaging found right ribs 5–8 with callus formation indicating subacute (>10 days old) rib fractures, resulting in a child abuse pediatrics consult. A skeletal survey showed right postero-medial 5–8 rib fractures. Head CT without contrast showed right occipital parietal soft tissue swelling. Bone mineralization appeared normal and metabolic bone mineralization workup including osteogenesis imperfecta labs was negative. Birth history revealed good prenatal care but a difficult delivery complicated by six failed vacuum-assist attempts with a pop off, Robertson maneuver, attempted clavicle fracture, and an ultimately successful corkscrew maneuver. Physical abuse was ruled out and a diagnosis of residual birth trauma was made based on the subacute rib fracture callus formation, subgaleal hemotoma, and birth history. He completed ten days of piperacillin/tazobactam with complete resolution of pyelonephritis. Repeat skeletal survey was negative.

**Discussion** Posterior rib fractures in infants are highly specific and suspicious for abusive injury; however, other causes must be considered. Neonatal fractures from routine deliveries are well-documented in the literature. In this case, difficult delivery including shoulder dystocia was pertinent history that aided in the diagnosis of birth trauma. Physicians should take a detailed history, including birth history, even when the presenting symptom appears not to be directly related. Labs investigating bone development disorders should be obtained as well.

**Abstract 495**

**SEVERE PANCYTOPENIA INDUCED BY VALPROIC ACID**

E Bergez*, A Wahba. The University of Texas Health Science Center at Houston, Houston, TX

10.1136/jim-2021-SRMC.495

**Case Report** Valproic Acid (VPA) is commonly used to treat pediatric epilepsy. This drug is usually well-tolerated and side effects are typically mild with hepatotoxicity being the most severe. In this case, a 2-year-old female with refractory epilepsy presented with pancytopenia. Laboratory evaluation showed severe neutropenia, thrombocytopenia, and anemia. Further investigation revealed a history of VPA use. Complete resolution of pancytopenia was observed after discontinuing VPA. This case highlights the importance of monitoring blood counts in patients on VPA therapy.**

<table>
<thead>
<tr>
<th>Lab Test</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 8</th>
<th>Day 9</th>
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<tbody>
<tr>
<td>Valproic Acid (mg/mL)</td>
<td>255</td>
<td>214</td>
<td>53</td>
<td>31</td>
<td>6</td>
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<tr>
<td>White Blood Cell x 10³/mm³</td>
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<td>3.6</td>
<td>2.3</td>
<td>4.9</td>
<td>6.8</td>
<td>7</td>
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<tr>
<td>Hemoglobin (g/dL)</td>
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<td>7.9</td>
<td>6.4</td>
<td>11.2</td>
<td>11.3</td>
<td>11</td>
</tr>
<tr>
<td>Hematocrit (%)</td>
<td>31.9</td>
<td>22.6</td>
<td>18.4</td>
<td>32.5</td>
<td>33.2</td>
<td>31.1</td>
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<td>Platelet x 10³/mm³</td>
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<td>3</td>
<td>124</td>
<td>103</td>
<td>143</td>
</tr>
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<td>Mean Platelet Volume (fl)</td>
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<td>9.4</td>
<td>8.2</td>
<td>7.8</td>
<td>9.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Neutrophil x 10³/mm³</td>
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<td>0.3</td>
<td>0.4</td>
<td>1.7</td>
<td>1.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Monocytes x 10³/mm³</td>
<td>0.3</td>
<td>0.1</td>
<td>0.8</td>
<td>1.4</td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Reticulocyte Count (%)</td>
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<td></td>
<td></td>
<td>5.4</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>Alanine Aminotransferase (unit/L)</td>
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<td></td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspartate Aminotransferase (unit/L)</td>
<td>22</td>
<td></td>
<td></td>
<td>64</td>
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</table>
widely recognized. However, as levels exceed 100 mcg/mL, few cases of hematologic toxicity such as thrombocytopenia, neutropenia, red cell aplasia, and acute leukemia have been reported. These toxicities appear to be reversible and dose-related. Direct bone marrow suppression and immune-mediated destruction are the two known mechanisms.

A 10 y/o Hispanic male with a history of epilepsy, presented with five days of lethargy. Lab work on admission was notable for pancytopenia and an elevated VPA level. VPA was discontinued and a peripheral smear revealed no blasts or other signs of leukemia. Due to the severity of thrombocytopenia, a trial of intravenous immunoglobulin was given. After two doses, labs continued to show pancytopenia. On Day 5, packed red blood cells and platelets were transfused for supportive measures. Afterward, labs showed evidence of bone marrow recovery and continued to uptrend on the following days. He was discharged on day nine with anticipation of complete normalization of counts by a one-week follow-up.

Conclusion Valproic Acid induced hematologic toxicity is becoming more frequently encountered, however, evidence for management is limited. Bone marrow suppression is a rarely seen complication in patients with VPA levels >100 mcg/mL. In these patients, immediate discontinuation of the drug is recommended. Resolution of the bone marrow suppression is expected to occur after ten days of VPA withdrawal. Patients taking VPA may benefit from periodic monitoring of cell line counts and caution should be taken when prescribing high doses.

496 A UNIQUE CASE OF GONOCOCCAL PRESEPTAL CELLULITIS IN AN ADOLESCENT WITH CEPHALOSPORIN ANAPHYLAXIS

N Buynak*, R Welliver. Oklahoma University Medical Center, Oklahoma City, OK

Case Report A 17 year old previously healthy male presented with progressively worsening left eye swelling, discharge, and fever after he reported being hit in the eye with an ice cube two days prior. He denied sinus symptoms, dysuria, or vision changes but admitted to photophobia and pain with lateral movement of his left eye. He reported recent protected sexual intercourse with his current girlfriend.

Physical examination showed significant edema, erythema, discharge, chemosis, and inability to fully lift his upper eyelid. The patient had restricted abduction of the left eye as well as left sided medial esotropia at rest. Genital exam was unremarkable. The CT scan showed pre-septal cellulitis with edema of the left lateral rectus muscle. Based on the sexual history, gonorrhea and chlamydia swabs of his eye were obtained and were positive for Neisseria gonorrhoeae by PCR.

Discussion Neisseria gonorrhoeae is a Gram-negative diplococcus that rarely causes infection of the eye beyond the neonatal period but can be exceptionally destructive. Our literature search identified 8 cases of gonorrheal pre- or post-septal cellulitis, only one of which occurred in the pediatric age group, and none of which have occurred in the context of cephalosporin allergy. All of the cases reported within the last 15 years were managed with a combination of ceftriaxone plus a macrolide.

Over the years, treatment for N. gonorrhoeae has evolved due to increasing antimicrobial resistance; However, in patients with anaphylactic allergic reactions to cephalosporins, there is no clear alternative. Because our patient was reportedly allergic to cephalosporins, he was treated with doxycycline for 10 days and 1 dose of azithromycin with clinical improvement by discharge.

In conclusion, this case suggests that a careful sexual history should be obtained from any patient with conjunctivitis and septal cellulitis in whom recent sexual contact seems possible. In subjects with gonorrheal infection and likely cephalosporin allergy, therapy with a combination of two or more antibiotics with activity against N. gonorrhoeae should be instituted, with careful observation of the clinical response. Further information regarding the management of gonorrheal infection at any site in subjects with cephalosporin allergy is needed.

497 ATYPICAL X-RAY PRESENTATION OF PNEUMOPERITONEUM POST KASAI PROCEDURE

Y Cao*, A Fernandez Bowman. Ascension Sacred Heart Hospital Pensacola, Pensacola, FL

Case Report A previously healthy 6-week-old term female presented for 2 weeks of worsening jaundice. Lab work showed conjugated hyperbilirubinemia and elevated liver enzymes. HIDA scan failed to visualize the gallbladder at 24 hrs and Intraoperative cholangiogram confirmed the diagnosis of biliary atresia. Kasai procedure with liver biopsy was
performed. Patient had been recovering well from surgery, until POD 2 when she was noted to have anasarca and abdominal distention that was initially deemed as expected following Kasai procedure. However, due to the extent of edema she was given albumin and lasix but abdominal distention worsened with associated tachycardia and exquisite tenderness to abdominal palpation. An abdominal x-ray (KUB) was obtained and showed a non-obstructive bowel loop pattern similar to KUB obtained postoperatively, with no obvious signs of free air on AP view. Lateral view, however, showed a large amount of intraperitoneal free air, more than expected for typical laparotomy. The patient was taken for emergent surgery and found to have a small disruption at jejunjejunostomy with bilious ascites. Following the procedure she improved and was discharged from the hospital one week later.

The Kasai procedure includes surgical complications of adhesive bowel obstruction and anastomotic leak. Our patient developed anastomotic leak and pneumoperitoneum that risked delay in diagnosis due to the absence of the classic football sign on AP KUB. The falciform ligament is an important landmark for recognizing pneumoperitoneum, however the falciform ligament is sometimes removed for better abdominal visualization during the Kasai procedure. A two view KUB plays a critical role when intra abdominal free air after Kasai procedure is suspected due to risk of complications associated with procedure and disruption of normal landmarks used to identify emergent complications.

Case Report A 6yo girl presented with abdominal pain and nonbloody, nonbilious vomiting for 3 weeks. A month prior she was hospitalized with staphylococcal shock syndrome but recovered with IV antibiotics and supportive care. IUTD; Meds: none; Allergies: NKDA; Family history: neg. PE: BP 108/53, HR 121, RR 24, T 36.9C, SpO2 99% on RA, Ht 85% Wt 88%. HEENT: WNL, Lungs: clear, heart: RRR, Abd: tender in RUQ, positive Murphy’s sign, nondistended, no organomegaly, normal bowel sounds, no masses. Labs: AST 66, ALT 103, GGT 33, WBC 19K with 89% neutrophils. Amylase, lipase normal. CRP < 0.1, ESR 12. Hepatitis panel, Monospot and EBV neg. UA: 1+ ketones and protein. CT abd neg for appendicitis but suggested cholecystitis. Abd US: gallbladder wall thickening but no stones. EGD neg. Acute acalculous cholecystitis (AAC) was diagnosed, she received IV fluids and ertapenem, responded well over 3d and went home on cefdinir.

Discussion Acute acalculous cholecystitis is gallbladder inflammation without gallstones. It is typically seen in critically-ill adults due to postoperative complications, severe trauma, or sepsis. AAC accounts for only 10% of cases of adult acute cholecystitis and is exceedingly rare in children. The etiology of AAC in pediatric patients is often unclear but has been associated with viruses like HAV and EBV, or bacterial infections. While cholecystectomy is first-line in adults, medical management with antivirals or antibiotics is currently preferred in children due to the risk of bile duct damage. In our pt we first suspected that sepsis from her prior hospitalization had led to gallbladder dysfunction. Aggressive medical management with antibiotics and supportive care led to improvement in her status thus avoiding surgical intervention.

Conclusion Although rare, acute acalculous cholecystitis must be on the pediatrician’s differential diagnosis of any child with RUQ pain and fever. One study of pediatric AAC reported a mortality rate of 15% (boys:girls 1:2, median age 4.9 years). It is important to note the differences in both the epidemiology and management of pediatric versus adult AAC. The risk of gallbladder necrosis and perforation make AAC a medical emergency which must be addressed promptly to prevent sepsis and multi-organ failure.
ACUTE RHEUMATIC FEVER IN A COVID-19 POSITIVE PEDIATRIC PATIENT

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10.1136/jim-2021-SRMC.500

Case Report Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2) is an RNA virus responsible for the novel coronavirus disease of 2019 (COVID-19) pandemic. Individuals with COVID-19 exhibit mild to severe disease, with a small proportion of individuals suffering severe pulmonary involvement and multi-system inflammation. Bacterial superinfection has been noted in both adult and pediatric populations, though much remains unknown about an individual’s age and their susceptibility to bacterial infection. One particular infection, Group A Streptococcal pharyngitis, is common in pediatric populations. Despite the prevalence of Streptococcal infection, the autoimmune sequelae of acute rheumatic fever is exceedingly rare in developed countries owing to high rates of rapid strep testing and antibiotic treatment. In this brief case report, we document the atypical clinical presentation, diagnostic evaluation, and treatment course of an 8-year old COVID-19 positive female with Sydenham’s chorea and carditis due to acute rheumatic fever. To our knowledge, there are currently no reports of acute rheumatic fever being diagnosed in a patient with a co-existing COVID-19 infection.

PEDIATRIC SPINAL EPIDURAL ABSCESS

KE Fogle*, RA Blake, TT Fleenor. UAB-Huntsville, Huntsville, AL

10.1136/jim-2021-SRMC.501

Case Report A 16 yo male presented with severe lower back pain. His pain began 9 days prior and was assumed secondary to a football injury. MRI w/out contrast of the lower spine showed a left lateral epidural fluid collection with spinal canal narrowing from L4-S1, thought to be a hematoma related to injury. He presented to the pediatric ED when the pain worsened. He described stabbing and tingling bilateral sciatic-type pain and gave 9/10 on pain scale. His pain had not responded to hydrocodone/acetaminophen or cyclobenzapine. He denied bladder/bowel incontinence, or saddle anesthesia. He had fever once 5 days prior, but none since. Vitals: T 37.6°C, HR 97, RR 18, BP 139/77, O2 sat 98% in RA. On exam, he was non-toxic in appearance, but uncomfortable and in pain. He had midline tenderness in the lower lumbar region and decreased lower extremity motion due to L4-S1 facet joint, epidural and intramuscular abscess, and posterior paravertebral myositis. IV antibiotics were started after blood cultures. He was transferred to a large tertiary care children’s hospital where pediatric neurosurgery drained the abscess in the OR.

Discussion Spinal epidural abscess (SEA) in a child is an extremely rare and emergent diagnosis. It presents as a progression of fever, back pain, and/or localized spinal tenderness, radiculopathy, spinal cord dysfunction including bladder/bowel symptoms, and finally complete paralysis (which can occur within hours). This patient’s pain was misleading initially due to his lack of recent fever and his football activity. However, elevated inflammatory markers and the MRI with IV contrast gave the diagnosis of SEA.

In most pediatric cases, infection is due to hematologic spread. Staphylococcus aureus is the most common organism. Treatment involves decompression and drainage of the abscess and IV antibiotics for an average duration of 6 weeks. Patients without neurologic deficits at diagnosis, like this patient, have a better chance for complete recovery.

Although rare, SEA should be considered in a child presenting with fever, severe back pain and neurologic compromise in order to prevent long-term complications.

PEDIATRIC REFRACTORY SECONDARY HEMOPHAGICOCYTIC LYMPHOHISTIOCYTOSIS SUCCESSFULLY TREATED WITH EMAPALUMAB

KM Galipp*, KA Beg, R Welliver, A Baker. University of Oklahoma Health Sciences Center, Oklahoma City, OK

10.1136/jim-2021-SRMC.502

Case Report Hemophagocytic lymphohistocytosis (HLH) is a severe, life-threatening syndrome characterized by excessive immune activation, hyperinflammation, and end-organ failure amongst other diagnostic criteria. Primary HLH arises in patients with a genetic predisposition. Secondary HLH (sHLH) occurs as a result of inflammation-inducing events such as severe infection, malignancy, or rheumatologic conditions. Standard HLH therapy with dexamethasone and etoposide was established in 1994. However, it is associated with frequent treatment failure and significant toxicity, contributing to the high mortality rate of HLH. Emapalumab, an anti-interferon gamma (IFNγ) monoclonal antibody, is a novel targeted therapy approved for primary HLH with refractory, recurrent, or progressive disease. No such therapy exists for sHLH.

We describe a pediatric patient with refractory sHLH successfully treated with emapalumab. A 12-year-old male with Philadelphia chromosome (Ph+) pre-B acute lymphocytic leukemia (ALL) in remission with ongoing maintenance therapy presented with Klebsiella pneumoniae sepsis. He was critically ill with complications including pancytopenia with severe neutropenia, septic shock, acute respiratory distress syndrome with respiratory failure, acute renal failure, and invasive fungal disease. He met criteria for HLH and began dexamethasone and etoposide. After three weeks, he remained clinically unstable with persistent cytopenias and rising inflammatory markers (figure 1). Salvage treatment with emapalumab was initiated, resulting in an astonishing complete recovery with no evidence of sHLH to date without need for stem cell transplant. This is the first report of successful use of emapalumab in...
A DEVIATION FROM THE TYPICAL BRAIN INFECTION
PC Guillory Hughes*, N Evans, M Bolton, J Stevenson, J Hughes. Our Lady of the Lake Regional Medical Center, New Roads, LA

Case Report
Brain abscesses are rare in infants; more commonly seen in school-aged children with an identified predisposing risk factor. The causative microorganism is typically associated with the predisposition, while at least 25% are polymicrobial. Adjacent infections are usually due to streptococcus, anaerobic or microaerophilic species, while staphylococcus and gram-negative bacilli are often seen with previous head trauma or neurosurgery.

A 3 month old female, born at 30 weeks gestational age, was admitted with fever. Cerebrospinal fluid (CSF) evaluation was consistent with bacterial meningitis, however, CSF and blood cultures remained sterile. She underwent head imaging due to left eye deviation, revealing a large mass in her left temporal lobe, measuring about 4.6 × 3.3 × 3.8 cm, with surrounding vasogenic edema and midline shift. CT-guided drainage was performed, and the purulent aspirate grew methicillin-resistant Staphylococcus aureus (MRSA). She was followed with weekly brain magnetic resonance imaging (MRI) which showed eventual resolution of the brain abscesses after completion of 8 weeks of vancomycin and, due to neutropenia, only 1 week of rifampin.

Brain abscesses have an estimated incidence of about 0.5 per 100,000. While risk factors are found in about 80% of cases, we did not identify any risk factors in our patient, such as preceding bacteremia or meningitis, immunocompromised state, or head trauma. Our patient spent 2 months in the neonatal intensive care unit (NICU), where up to 8% of patients are estimated to be colonized with MRSA before discharge. She did have a MRSA pustule noted in the NICU, however, studies report less than 1% of brain abscesses are preceded by skin infections. Prior reports suggest staphylococcus and streptococcus species are often identified in the brain after hemotogenous spread, though our patient never had a positive blood culture throughout either of her hospitalizations.

The case illustrates a rare idiopathic brain abscess in an infant outside of the NICU setting. Prior case reports of MRSA brain abscesses have been identified in NICU settings, which raises the prospect of NICU admission as its own risk factor. Further case reports of such infections could help to establish greater understanding of the risk factors of this illness.

DEVELOPMENTAL VENOUS ANOMALY PRESENTING AS ACUTE SYNCOPE AND ATAXIA: A CASE REPORT AND LITERATURE REVIEW

Case Report
Developmental venous anomalies (DVAs) are considered non-pathological malformations of medullary veins. It is the most common type of venous malformation, occurring in up to 4% of the population. Although DVAs are considered to be benign, in extremely rare cases, they can have associated symptoms attributed to a mechanical or flow-related pathomechanism. Here, a case of a 12 year old patient exhibiting symptoms of acute syncope and ataxia with an underlying etiology of intracranial DVA is presented. The anatomy and suspected pathogenesis of DVAs is discussed, along with a literature review focused on the differential diagnosis of ataxia and syncope.

UNEXPLAINED WEIGHT LOSS AND DYSPHAGIA IN A PATIENT WITH CEREBRAL PALSY

Case Report
A 19 year old male with cerebral palsy, Dravet Syndrome and non-verbal developmental delay presents to his primary care physician with weight loss, progressive dysphagia, increased drooling over baseline over the past several months. Patient had been seen multiple times in Emergency Rooms with these symptoms where Xrays of the nose, chest, neck and abdomen as well as a CT of the chest were all normal.

On physical exam patient had pulse of 100, normal blood pressure, oxygen saturation and a weight loss of 15.6 kg since last visit 10 months prior. There was drooling and occasional choking episodes but no stridor and no evidence of respiratory distress; lungs were clear.

Abstract 505 Figure 1  Foreign body removed from patient
Because of persisting symptoms, patient was admitted to inpatient floor where CT of neck revealed a foreign body in hypopharynx with extensive edema. Patient was admitted to the PICU for airway management which included intubation. An attempt to remove the foreign body via endoscopy was unsuccessful but ENT consultation using rigid esophagoscopy was able to extract a 2 inch by 2 inch plastic Easter Bunny cupcake topper (figure 1). In retrospect, parents had suspected foreign body ingestion 10 months prior.

This case highlights the necessity of meticulous history taking and the importance of choosing the correct diagnostic modality especially in children with cerebral palsy. In this case a foreign body lodged in the hypopharynx for 10 months leading to potential life threatening complications.

**Case Report**

Our patient is a 13-year-old obese female who presented to the ED with a 1-week history of fever, vomiting, diarrhea, bilateral lower quadrant abdominal pain and new onset hematuria. Earlier that week, she was diagnosed with a urinary tract infection in a clinic based on history alone, without urinalysis, and was treated with a 5-day course of Bactrim without resolution of symptoms. Initial workup in our ED yielded labs consistent with acute kidney failure with an elevated CRP. Urinalysis showed hematuria and proteinuria without evidence of UTI. Initial read of renal U/S showed a 1 cm stone in distal right ureter. Although the differential diagnosis was broad and included renal, urologic, infectious and gynecologic etiologies, the diagnoses that seemed most likely were renal stone, nephritic syndrome and MIS-C. The following day, the U/S read was appended and indicated that the ‘stone’ represented bowel content with low suspicion for stone, prompting further imaging. CT abdomen and pelvis without contrast revealed acute appendicitis, with perforation and 2 cm abscess. Our patient underwent laparoscopic appendectomy and washout of the abscess without complication. She was treated with IV Rocephin and Flagyl and discharged with 10 days of Augmentin.

Appendicitis is a common cause of abdominal pain in children and typically presents with a constellation of symptoms including anorexia, periumbilical pain with migration to RLQ, fever, vomiting and pain with movement. Appendiceal perforation is more common after 72 hours of symptoms and can cause generalized peritonitis or, as in our patient, a walled-off abscess. Perforations occur in 10–20 percent of patients with appendicitis. Studies have shown that children who receive antibiotics prior to surgical evaluation have delayed diagnosis of appendicitis due to decreased physical exam findings. They tend to have a higher degree of fever and elevation of CRP prior to surgery compared to those without antibiotics. This case is unique because our patient presented in acute kidney failure with hematuria and not with the typical abdominal pain and lab findings seen in appendicitis. This also serves as a reminder to perform a urinalysis and culture prior to starting antibiotics in cases of presumed urinary tract infections to prevent masking other infections.

**Case Report**

Clinidamycin, vancomycin, and linezolid are the only FDA approved antibiotics for MRSA infections in pediatrics. We report a case of MRSA bacteremia and septic arthritis that persisted on vancomycin and improved after switching to daptomycin therapy.

A 16-year-old male with possible diffuse leptomeningeal glioneuronal tumor diagnosed at outside hospital (OSH) presented with worsening back and hip pain, emesis, and headache several days per week. Previous evaluation at OSH included LP showing elevated protein, MRI with leptomeningeal enhancement of the spine and brain, and a R temporal lobe biopsy concerning for diffuse leptomeningeal glioneuronal tumor. Patient was febrile upon presentation to our institution. Blood cultures were obtained, and he was started on vancomycin and ceftriaxone. Oncology consulted and recommended a CT Head, which showed tetra-ventricular hydrocephalus. Physical exam found papilledema and repeated blood cultures were positive for MRSA bacteremia. Infectious Disease consulted due to persistent MRSA bacteremia while on vancomycin, MRI pelvis, hip, and femur ordered due to back and hip pain, and echocardiogram ordered due to bacteremia, which showed no valve vegetations. MRI showed septic arthritis of L sacroiliac joint with periarticular abscess, myositis, and intra-pelvic free fluid, as well as adjacent myositis of the left iliacus, left obturator internus, and left piriformis muscles, the likely source of MRSA bacteremia. Interventional radiology coordinated drainage and culture of his abscess. Due to persistently positive MRSA bacteremia for four days while on vancomycin, he was switched to daptomycin, which achieved clearance of bacteremia. After his first negative blood culture, he received a ventriculoperitoneal shunt due to hydrocephalus, two additional days of daptomycin, and then was transitioned to clindamycin therapy for four weeks.

Daptomycin has not been thoroughly studied in pediatrics, but has several benefits over vancomycin, including once daily dosing, faster switch to step down oral therapy, and less nephrotoxicity. One could argue, use of daptomycin could replace traditional antibiotics for hospitalized patients with complicated skin infections.

**Case Report**

Traumatic injury to the penis may occur from a wide variety of mechanisms in the context of accidental injury, or child physical or sexual abuse. Accidental penile injuries may include injuries occurring during toilet training, from zippers, hair tourniquets, straddle injuries, kicks, or more traumatic events such as bike wrecks or automobile accidents. The developmental ability, caregiver history provided, and other concurrent injuries play an important role in distinguishing between accidental or inflicted trauma.
Case Description A 3 month old male presented to the emergency room due to redness on the glans and shaft of his penis that parents reportedly noticed after a bath. Coagulation studies and complete blood count were obtained and were unremarkable. Social work, child protective services, and law enforcement were contacted. He was seen in follow-up the next day at a children’s advocacy center, where a child abuse pediatrician ordered imaging studies, including a non-contrast head CT and a full skeletal survey. Head CT was negative. The skeletal survey found bilateral distal medial metaphyseal corner fractures of the femurs, which raised additional concern for child physical abuse and prompted hospital admission for further management. Pediatric orthopedics was consulted for management; treatment included a Pavlik harness. The patient’s father later confessed to forcefully pinching the glans penis in an attempt to stop urination during the patient’s bath. The child abuse pediatrician testified during the trial for this patient, which found the defendant guilty of child physical abuse.

Discussion Classifying an injury as accidental vs physical or sexual abuse depends on the setting in which it is reported as well as the intent behind the injury. Multiple accidental mechanisms of injury for the penis bruising were given prior to confession; no history was provided for the metaphyseal corner fractures. Child physical abuse was diagnosed due to the additional fractures and lack of history consistent with the injuries. This case represents an uncommon presentation of child physical abuse that highlights the need for full appropriate medical evaluation and investigation by coordinating agencies.

509 PERICARDIA CYST IN 17-YEARS-OLD MALE PRESENTED WITH CHEST PAIN MIMICKING PERICARDITIS

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Case Report A 17 years-old male presented to the ER with chest pain. The pain was sharp, worsening with lying flat and improving with sitting upright and leaning forward. The patient denied any fever or cold symptoms.

O/E: Vitals were stable, with a non-significant cardiac exam. EKG showed diffuse ST elevations.

Labs: Troponin 5.6 ng/ml, CK-MB 26.7 ng/ml, CRP 1.5 mg/L, ESR 1.0 mm/hr, with unremarkable CBC. Echocardiogram showed normal ventricular size and function with a fluid collection seen lateral to the left ventricular apex with no restriction to cardiac filling.

After 3-days of in-patient management with ibuprofen and colchicine for presumed myopericarditis, the pain was resolved.

4-days later, he presented again with persistent chest pain. Repeat workup showed: Troponin <0.04 ng/ml, CRP 2.1 mg/L, persistent diffuse ST elevations and persistence of fluid collection. A chest CT showed a 3.4 × 1.9 × 5.3 cm fluid attenuation substructure, likely a pericardial cyst.

Percutaneous aspiration was successfully done. However, 6-months later the patient presented again with recurrent chest pain and fluid collection. This time, an open resection of the cyst was done with pericardiotomy, which relieves his symptoms.

Discussion Pericardial cyst is a rare congenital anomaly with an incidence rate of 1/100,000. The presentation may vary from incidental asymptomatic to pleuritic chest pain. Asymptomatic cysts are often found incidentally on a chest x-ray. Echocardiogram can identify the cyst as an echolucent mass adjoining the cardiac border. CT scan is the best modality for diagnosis.

Management options include conservative management with follow-up, percutaneous aspiration and excision of the cyst. Current recommendation for asymptomatic cyst is serial monitoring with CT or MRI every 1–2 years. The first line treatment for symptomatic cyst is aspiration. However, the recurrence rate may reach up to 33%. If the cyst recurs after drainage, surgical resection may be necessary.

Conclusion While the presentation of symptomatic pericardial cyst is rare in childhood, it should be considered in patients who are complaining of positional chest pain. Furthermore, the possibility for recurrence after aspiration should be expected and regular follow up is indicated.

510 LECLERIA ADECARBOXYLATA CELLULITIS IN A SEVEN-YEAR-OLD IMMUNOCOMPETENT CHILD: CASE REPORT AND LITERATURE REVIEW

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Case Report Lecleria adecarboxylata is a Gram-negative rod previously named Escherichia adecarboxylata, due to similarities in metabolic products between the two species; however, it belongs to the family Enterobacteriaceae. It has been described as an emerging human pathogen with the potential to cause severe infection in immunocompromised patients. However, it does not commonly affect immunocompetent patients. There has been a very limited number of cases reported in the literature of infection with L. adecarboxylata in immunocompetent patients and is mostly found in the adult literature. We present the case of an immunocompetent seven-year-old patient who developed L.adecarboxylata cellulitis.

511 SYNDROMIC CRANIOSYNOSTOSIS AND HEREDITARY SPHEROCYTOSIS: A CASE SERIES

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Purpose of Study Crouzon syndrome is an autosomal dominant disorder classically recognized by craniosynostosis causing secondary exophthalmos and hypertelorism. Hereditary Spherocytosis (HS) is a more common, autosomal dominant disorder that is defined by red blood cell membrane defects leading to lifelong extrinsic hemolytic anemia, often necessitating a splenectomy. In this case series, the father has mild HS and phenotypically suspected mild Crouzon syndrome, whereas all three of his children have both HS and phenotypically diagnosed Crouzon syndrome. These conditions have been well studied, but no case series have yet described a possible clinical correlation between them.
Case Report

Altered mental status (AMS), hypoglycemia, and diarrhea can be caused by a variety of etiologies, including malnutrition, underlying metabolic disorders, and post-surgical complications. This case report dives into a unique presentation of new onset AMS with syncope, hypoglycemia, and diarrhea in a medically complex pediatric patient.

Case Description

The patient is a 2 year old female with a history of Turner syndrome with associated bicupid aortic valve, developmental delay, failure to thrive status post gastrotomy tube (GT) placement and Nissen fundoplication, and trichotillomania who was admitted from primary care with diarrhea, poor feeding and weight loss. The initial primary goal for hospitalization was to optimize nutrition and weight gain (through bolus GT feeds), however during admission the patient had several three to five-minute episodes of AMS with syncope, severe hypoglycemia (blood glucose < 20 mg/dL), and bloody diarrhea. Symptoms were rapid in onset and prompted emergent evaluation. Critical labs were remarkable for elevated beta-hydroxybutyrate, normal serum insulin, low c-peptide, normal ammonia, and low-normal growth hormone. Esophageal-gastroduodenoscopy and colonoscopy were performed, with findings showing mild to moderate diffuse colitis with prominent vessels in the splenic flexure. After further investigation, the diagnosis of Dumping Syndrome was made. Given this, her GT feeds were changed to continuous, prompting further work up including full exome sequencing, which was unremarkable. The etiology for her hypoglycemia still remains a mystery.

Discussion

This case illustrates a medically complex patient who developed acute problems during hospitalization and required a multi-disciplinary approach for their care. Dumping syndrome is a phenomenon seen in patients with gastrointestinal procedures, including Nissen procedures. The manifestations of this syndrome can be challenging to diagnose, especially when there are multiple associated symptoms. Switching the patient’s feeds from bolus to continuous resolved a majority of her problems, however her ketotic hypoglycemia persisted and further investigation is still underway.

513

AGGREGATIBACTER APHROPHILUS CULTURE-NEGATIVE ENDOCARDITIS IN A PEDIATRIC PATIENT DIAGNOSED VIA MICROBIAL CELL-FREE DNA TEST

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Case Report

Infective endocarditis due to Aggregatibacter aphrophilus is rare and can be difficult to diagnose. We report a case of culture-negative infective endocarditis identified by a microbial cell-free DNA test.

A 9-year-old female presented with 2 months of fever, weight loss, and cough. Physical exam revealed diminished breath sounds overlying the right lung. Labs showed elevated white blood cell count, procalcitonin, and C-reactive protein. Chest X-ray showed a cavitary lesion in the right lower lobe. Chest CT demonstrated a necrotizing cavitary pneumonia in the right lower lobe, a small cavitary lesion in left lower lobe, right perihilar/paratracheal and infracarinal lymph nodes, and a right lower lobe pulmonary artery branch thrombus. Blood culture was negative, as was testing for tuberculosis, histoplasmosis, and blastomycosis. A transthoracic echocardiogram displayed abnormal appearance of the left coronary cusp and a dilated aortic root with no obvious vegetations. Chest CT angiography revealed a fistula between the left coronary artery and right atrium. She was receiving vancomycin and ceftriaxone, and pulmonology was considering performing a bronchoalveolar lavage (BAL) to assist in diagnosis and direct therapy. Microbial cell-free DNA test detected high levels of Aggregatibacter aphrophilus. A transeosophageal echocardiogram showed a 2 × 2.5 mm echogenic round structure on the left side of the atrial septum suspicious for a vegetation. Vancomycin was stopped, and she completed a 6 week course of parenteral ceftriaxone with repeated microbial cell-free DNA tests to monitor therapy response.

Although her blood culture remained negative, next generation sequencing of microbial cell-free DNA led to the diagnosis of Aggregatibacter aphrophilus endocarditis, avoiding the need for a BAL and allowing antibiotics to be narrowed. Additionally, response to therapy was assessed via subsequent microbial cell-free DNA tests throughout the patient’s therapy demonstrating a potentially novel technique for monitoring a patient’s response to therapy for endocarditis treatment.
Abstracts

514 SHRUNKEN HEADS AND TINNITUS: ALICE IN WONDERLAND SYNDROME AS A SEQUELAE TO INFLUENZA A

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Case Report Alice in Wonderland Syndrome (AWS) is a rare neurological condition characterized by disorienting alterations in the perceived size or shape of objects and persons. This may be characterized by telopsia and pelopsia or objects appearing farther or nearer than they actually are, respectively. Additionally, patients may experience micropsia and macropsia or objects appearing smaller or larger than they actually are, respectively. Other patients describe reductions or expansions in the perceived size of their own body parts or even distortions in time and levitation. Here we present a unique case in a pediatric patient and review the signs and symptoms, causes, diagnosis and management of AWS.

A 9-year-old male presents with visual changes. The patient first noticed episodes where students in class appeared to have in the perceived size of their own body parts or even distortions in time and levitation. Here we present a unique case in a pediatric patient and review the signs and symptoms, causes, diagnosis and management of AWS.

The most common causes of AWS are migraines and epilepsy, however, it is also associated with viral etiologies, encephalitis, ischemia, tumors, psychiatric diseases and intoxicants. The Epstein-Barr virus is the most widely reported infectious cause, however, three articles have described AWS from H1N1 influenza A. Tinnitus is a newly described feature.

The most common causes of AWS are migraines and epilepsy, however, it is also associated with viral etiologies, encephalitis, ischemia, tumors, psychiatric diseases and intoxicants. The Epstein-Barr virus is the most widely reported infectious cause, however, three articles have described AWS from H1N1 influenza A. Tinnitus is a newly described feature. Influenza A was the most likely cause in this patient and his symptoms resolved within weeks to months in expected fashion. Judicious assessment for the patient’s underlying condition should be performed, though extensive testing may not be necessary in the setting of a recent viral illness.

515 IS THIS NOT ANOTHER CASE OF CEREBRAL EDEMA IN DKA?

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Case Report Among the most rare complications of Diabetes ketoacidosis (DKA), cerebral edema is the leading cause of death. Consequently, preventing cerebral edema has remained the focus in the management of patients with DKA. We present a case that heightens the importance to consider other less common complications of DKA that can result in acute and long-term morbidity that if not recognized promptly can result in death. 12 year-old female who presented from an outside facility with a 1 day history of abdominal pain, nausea and non-bilious emesis after receiving 30 units of insulin at home for ‘Hi’ glucose readings in the glucometer. She arrived ‘unresponsive’ to the outside hospital, workup revealed that she was in DKA (Glucose: 1,080, pH 7.081, bicarbonate of 8). An insulin drip was initiated at a rate of 0.1 unit/kg/hr, she received 2 liters of normal saline (bolused and later was transferred to our Pediatric Emergency Department. On arrival to our facility, she was normotensive (BP 118/97), tachycardic (HR 152), tachypneic (RR 48) and her exam was concerning for cerebral edema (stuporous and pupils sluggish to react) for which she was given 1 gr/kg of Mannitol. The patient became more alert, diuresed more than 300 ml and then was transferred to the Pediatric Intensive Care Unit (PICU) for further management. On arrival to the PICU the patient developed hypotension (after three 1 liter boluses and 1.5 maintenace IV fluids) requiring initiation of norepinephrine and epinephrine drips. Hours later, her abdomen was noted to be distended and bilious contents were retrieved from her nasogastric tube. This prompted further workup (abdominal X-rays and CT) that revealed bowel ischemia resulting in an emergent laparoscopy and a 250 cm bowel resection. During her hospitalization, the patient was treated for Klebsiella, Pseudomonas and Stenotrophomonas respiratory infections, received Clindamycin to treat a sacral pressure wound infection, developed short gut syndrome and was treated for depression. She required extensive collaborative management between the primary team, surgery, gastroenterology, endocrinology, infectious disease, nutrition, social work and psychiatry to treat the multiple co-morbidities that resulted from this single DKA event in her 2 month hospital stay.

516 ALTERED MENTAL STATUS PRESENTING TO THE PEDIATRIC EMERGENCY DEPARTMENT

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Case Report Introduction Hyperosmolar hyperglycemic state (HHS) represents a syndrome of acute diabetic decompensation characterized by marked hyperglycemia, hyperosmolality, dehydration and decreased mental status that may progress to coma. About 20% of patients have no known history of type 2 diabetes. Case A 15 yo male presented to the emergency department with altered mental status. Mom reported that he had malaise, polydipsia and polyuria for 1 week and 2 days of right flank pain. She denied fever, cough, headache, diarrhea, vomiting and rash. Prior to arrival he was found unresponsive with urinary incontinence.

Vital signs: HR 136 RR 20 BP 140/62 T 101.2 90% on RA

Responsive only to deep sternal rub. HEENT: PERRL. Respiratory: CTAB. Cardiac: Tachycardic, gallop present. Skin: Cool peripherly, no edema, or petechiae. Abdomen: soft, NTND. Neuro: No obvious focal deficit.

Labs: VBG: pH 7.18, pCO2 49.9, pO2 59, HCO3 19, Lactic acid 7.5, glucose >700 Lipid Panel: normal CMP: Na 131, K 3.4,Bicarb 9, Bun 42,Cr 2.93, Albumin 5.0, liver enzymes normal, Phos 2.3, Mg 3.55, Ca 10.9, glucose 2238, lipase 1600. CT head revealed cerebral edema, MRV negative for dural sinus thrombosis. COVID PCR positive, VRP negative.
Hospital course: ED: Patient was given 2L of LR boluses, mannitol and insulin drip was started. 2 LPM of supplemental oxygen was given for hypoxia to 88%.

ICU: Patient was intubated for acute respiratory failure and shock. Received >8L volume and was started on epinephrine, vasopressin and milrinone. He was given steroids for fluid resistant shock, vancomycin, cefepime and flagyl. Echocardiogram showed hyperdynamic function. Elevated ferritin, d-dimer and inflammatory markers were concerning for multisystem inflammatory syndrome (MIS-C), so he received IVIG. Became oliguric with AKI requiring dialysis.

Discussion Associated diseases in HHS are gram-negative pneumonia, GI bleeding and gram negative sepsis. There is insufficient data on SARS-CoV-2 and HHS. Case reports indicate that MIS-C may present with clinical entities as varied as appendicitis, pseudotumor and encephalopathy. We present a unique case of HHS and MIS-C. Pediatric HHS has a higher incidence of fatal cerebral edema and warrants early recognition and further investigation as our clinical understanding of MIS-C continues to evolve.
Case Report

Pneumatosis coli is a rare clinical sign with the presence of gas in a linear or cystic form in the submucosa or subserosa of the bowel wall. In adults, it can often be an incidental finding with little clinical significance, and this is sometimes true in children too. However, it can also be a sign of bowel ischemia and clinical presentation must direct management. It is reported as a rare complication of appendicitis with a grave prognosis. This report presents 2 children with acute appendicitis with pneumatosis coli. One child additionally had portal vein gas.

A 9-year-old girl was referred with a 4-day history of abdominal pain, fever, and constipation. Computed tomography (CT) imaging showed pneumatosis coli with periappendiceal inflammation indicating appendicitis. Diagnostic laparoscopy showed acute perforated appendicitis and no gross evidence of bowel ischemia. Appendectomy was performed with uneventful recovery. The second patient is a 12-year-old boy who presented with a 10-day history of abdominal pain, fever, emesis, and constipation. CT scan revealed pneumoperitoneum, portal venous gas, and intraabdominal phlegmon. Laparoscopic appendectomy was performed with intraoperative findings of the perforated appendix with multiple appendicoliths. An inflammatory abscess measuring along the terminal ileum was resected; this was found to be a Meckel's diverticulum.

Immediate surgical exploration is indicated in cases of pneumatosis coli with concern for bowel compromise. In clinically stable patients with appendicitis who have pneumatosis coli or portal venous gas, laparoscopic appendectomy should be performed with additional attention towards examining the bowel and rest of the abdomen to ensure the viability of bowel and to exclude other underlying etiologies of pneumatosis coli.

Upon admission, our patient had a fever of 104°F, otherwise normal vital signs. She was noted to have an erythematous macule on her left wrist, consistent with a rose spot. She was diagnosed with presumed enteric fever, and the infectious disease team was consulted. Due to recent outbreaks of drug-resistant Salmonella enterica Typhi reported in Pakistan, IV meropenem was started. She continued to have symptoms, and daily blood cultures grew S. Typhi. On day five of her hospitalization IV azithromycin was added. Daily blood cultures remained positive for seven days before showing no growth. On day ten she was discharged home on oral azithromycin, and her fevers resolved two days after discharge.

During 2016–2018, an outbreak of S Typhi resistant to standard antibiotics was reported in Pakistan. This strain, termed ‘extensively drug-resistant (XDR) Salmonella enterica Typhi’ has infected more than 5,000 patients in endemic areas, as well as travelers in these areas, including five cases in the United States. We present the case of a child who acquired XDR typhoid during a visit to Pakistan and required broad antimicrobial treatment. Clinicians should be aware that incoming cases of enteric fever may be resistant to commonly recommended antibiotics (such as ceftriaxone), and that XDR typhoid requires treatment with carbapenems (such as meropenem) or azithromycin. The growing concern for these newly resistant organisms has prompted the World Health Organization to identify S Typhi as a high-priority pathogen for the development of new antibiotics.
and thrombocytosis. An echocardiogram was normal. Based on prior medical history, a presumptive diagnosis of Kawasaki Disease was made. The patient was successfully treated with IVIG and 81 mg ASA daily. No abnormalities were found in outpatient cardio follow-up six weeks after discharge, so ASA was discontinued.

**Discussion** This case is a rare presentation of Kawasaki Disease, with 11 days of symptoms until diagnosis. This diagnosis requires purposeful questioning, along with clinical and lab findings. Recognizing this syndrome is critical due to its potential to cause fatal coronary artery aneurysms. This atypical presentation should remind clinicians to always be aware of the diverse manners in which Kawasaki Disease may appear.

**Case Report**

A 4-month-old term female infant with a PMH of IUGR (BW 2.52 kg, 9th%) presented to the ED with complaints of intermittent crying episodes over the past 2 months that have increased in frequency and severity over the past 2 days. The mother also noted persistent sweating with episodes of panting both at rest and during feeds. PE: thin infant in NAD with stable vital signs. Wt 4.68 kg (2nd %), length 61 cm (39th%), HC 33 cm (10th%). HEENT- WNL; lungs- CTAB; heart- RRR, 2/6 systolic ejection murmur at LLB; abdomen- no hepatomegaly; neuro- WNL. Labs: CBC unremarkable with CMP showing mild anion gap acidosis and elevated alk phosph (417 IU/L). CXR- NSR with RA enlargement and right axis deviation. CT chest with contrast showed a dilated RV and a large vein in the central portion of the RLL draining into the IVC as well as RLL atelectasis, consistent with Scimitar syndrome. The patient was referred to cardiology for further evaluation.

**Discussion**

Scimitar syndrome, a subtype of the partial anomalous pulmonary venous connection (PAPVC) defects, is characterized by right lung hypoplasia and sequestration combined with rightward displacement of cardiac structures, and partial or entire anomalous curved venous drainage of the right lung to the inferior vena cava, exactly as seen in our case. The characteristic curved right pulmonary vein draining into the IVC resembles the Middle Eastern sword known as the ‘Scimitar’. This malformation occurs in 1–3 per 100k live births with a 2:1 female predominance. The presentation varies from asymptomatic (incidental dx later in childhood or adulthood) to severe, with patients presenting with respiratory distress and congestive heart failure early on. Infants can present like our patient with poor feeding, failure to thrive, tachypnea, and fussiness and/or with lethargy, cyanosis and recurrent pulmonary infections. Pulmonary hypertension is a common and serious complication of the condition. The prognosis for infants presenting during the first year of life is guarded, with one study showing 40% mortality by 6 years of age. It is important to recognize Scimitar syndrome and other PAPVC conditions in order to appropriately treat their associated medical conditions and refer for surgery if necessary.
A CASE OF CLINICAL DECISION MAKING IN A HIGH RISK BRUE

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Case Report A 12-day-old, full-term male presented for evaluation of periornal cyanosis while crying and feeding with transient oxygen desaturations in the 80s. The following studies were performed in the emergency department. His exam revealed no evidence of choanal atresia. A respiratory viral panel was negative. His EKG was unremarkable, and his echocardiogram revealed a small patent foramen ovale with normal ventricular pressures. After an initial normal assessment, the medical team considered the diagnosis of a BRUE (brief resolved unexplained event). However, because of this patient’s age and presentation, the 2019 AAP clinical framework for evaluation of BRUE in high risk infants recommends a period of observation to ensure stable vital signs, adequate feeding, and to consider additional testing. As such, the patient was admitted to the pediatric hospitalist service.

Upon admission, ENT was consulted to consider anatomic abnormalities. A CT chest was obtained to rule out tracheoesophageal fistula, which was inconclusive. An upper GI series showed no evidence of TEF; however, significant gastroesophageal reflux was identified, and a PPI was started. The patient continued to have intermittent desaturations, which prompted the medical team to pursue invasive imaging. A direct laryngoscopy and bronchoscopy were performed by ENT and revealed a large thyroglossal duct cyst at the base of the patient’s tongue causing transient airway obstruction. The thyroglossal duct cyst was removed without complication, after which the patient’s oxygen saturation and feeding normalized.

Based on this patient’s history, the AAP’s clinical framework to address high risk BRUEs guided medical decision making, which in this case prompted additional tiers of testing. The patient’s clinical course necessitated a thorough history, exam, imaging and, ultimately, a diagnostic procedure. Furthermore, the AAP recommends a multidisciplinary approach to care. In this case, General Pediatrics and ENT were instrumental in this high risk patient’s timely diagnosis and treatment, which resolved the risk of a life-threatening event.

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SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 INFECTION IN NEONATES SEEN IN PEDIATRIC EMERGENCY DEPARTMENT REQUIRING HOSPITALIZATION: A CASE SERIES

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Case Report Novel coronavirus disease 19 (COVID19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has led to significant morbidity and mortality, as well as social and economic upheaval. Nevertheless, there remains little known about its effects on neonates (<28 days). We present a retrospective case series of full term, previously healthy neonates admitted to our tertiary pediatric hospital from the emergency department (ED) with a positive COVID19 test.

Case Presentation Case 1: 24 day old presented with difficulty breathing and poor feeding. She initially received intravenous (IV) fluids, never required respiratory support, and was discharged in less than 48 hours. Her father had symptoms concerning for COVID19.

Case 2: 18 day old presented due to fever at home. She had a sepsis workup and was started on antibiotics; however, blood, urine, and cerebrospinal fluid (CSF) cultures remained no growth. She did not require IV fluids or respiratory support and was discharged in less than 48 hours. Her father had a febrile illness but was COVID negative.

Case 3: 13 day old presented with congestion and fever. He had a sepsis workup and was started on antibiotics; however, blood, urine, and CSF cultures remained no growth. He received a fluid bolus in the ED and required 0.5 liters of oxygen for hypoxia. He was discharged just after 48 hours. His mother was experiencing congestion prior to the ED visit and his father and brother had febrile illnesses around his birth.

Case 4: 17 day old presented with fever, cough, congestion, and difficulty breathing. She did not require IV fluids or respiratory support and was discharged in less than 48 hours. Her grandmother was COVID19 positive.

Discussion Albeit unique presentations, these cases highlight similarities in neonatal COVID19 infections. These previously healthy full term neonates tolerated the infection well with mild symptoms and were treated supportively. The identification of sick contacts in all cases underscores the need for strict precautions when caring for neonates.

DISSEMINATED HSV IN A NEONATE PRESENTING WITH HYPOXIA

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Case Report A 6 day-old male was admitted with concerns for aspiration and hypoxia. On arrival, physical exam was reassuring without significant work of breathing but with persistent oxygen saturations in the 80s while on room air. Chest X-ray on admission showed an infiltrate consistent with aspiration. The patient was stable on 0.5L nasal cannula until 16 hours later when he acutely decompensated and required intubation secondary to respiratory failure. Blood cultures and HSV studies were obtained and broad spectrum antibiotics and antivirals were started. No CSF studies were able to be obtained due to instability. Labs showed elevated transaminases and findings consistent with disseminated intravascular coagulation. He required multiple vasopressors shortly after intubation and developed a worsening lactic acidosis despite increasing support. He was ultimately placed on V-A ECMO given worsening clinical status. His HSV blood and surface PCRs resulted as positive for HSV II. His course was complicated by liver failure with direct hyperbilirubinemia, TPN dependence, intracranial hemorrhage, anuric renal failure, and bacteremia. He succumbed to disseminated HSV and ESBL Klebsiella bacteremia at 20 days of life.

Discussion Herpes simplex virus occurs in 1 out of every 3200–10000 live births, and it is often transmitted from
PEDIATRIC DIABETIC KETOACIDOSIS PRESENTING WITH SPINAL OSTEOMYELITIS DUE TO BARTONELLA HENSLAE

A 7-year-old female presented 5 weeks after swallowing a nickel. KUB on the day of ingestion showed a RLQ foreign body. A bowel regimen was initiated to promote passage of the coin. Weekly outpatient KUBs revealed persistent positioning of the coin. On the day of presentation, she developed worsening abdominal pain. Her mom reported a history of constipation and occasional painless hematochezia. Exam revealed mild abdominal tenderness and KUB was unchanged. CT revealed a coin proximal to the terminal ileum without signs of obstruction or dilation. Endoscopy was deferred given the position of the coin in the small bowel. Exploratory laparotomy revealed a Meckel’s diverticulum containing a coin that had eroded through the intestinal wall. The coin was blocking the perforation and preventing leakage of air or bowel contents into the peritoneal cavity. Small bowel resection with foreign body removal was successful.

Discussion A Meckel’s diverticulum is a true diverticulum in the distal ileum that results from persistence of the vitelline duct. It is the most common congenital malformation of the GI tract, occurring in about 2% of the population. The lifetime complication risk is 3–4.4% and includes obstruction, hemorrhage, inflammation, or perforation resulting in peritonitis. Foreign bodies can become entrapped within the diverticulum due to its wide opening and decreased motility. Stasis, pressure necrosis, local bacterial inflammation, and perforation can result. Cases of foreign body entrapment and subsequent complications have been documented in patients as young as 12 months old. Bone fragments (38%), wood splinters (14%), food (12%), and pins/needles (9%) are among the most common foreign bodies entrapped. Surgical options for removal include diverticulectomy and partial bowel resection.

SPINAL OSTEOMYELITIS DUE TO BARTONELLA HENSLAE

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A 6-year-old immunocompetent male presented with 2 weeks of fever, acute right hip pain, and difficulty ambulating without any history of trauma. On exam, he had an antalgic gait and tenderness over the right sacroiliac and lumbar paraspinous area without lymphadenopathy, erythema, or joint effusions. Labs showed mild neutrophilic predominant leukocytosis, elevated inflammatory markers, and hip MRI consistent with right sacral osteomyelitis. Empiric treatment was initiated with ceftriaxone and vancomycin. Symptoms persisted despite two weeks of continued therapy when he was noted to have previously overlooked scratch marks on his arms from his kitten; B. henselae serum titers were sent. However, due to a lack of consensus on the condition by infectious disease specialists, no treatment changes were made.
AN AUTOIMMUNE BASIS FOR POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME

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Case Report Postural orthostatic tachycardia syndrome (POTS) commonly affects young adolescent females, is characterized by upright tachycardia, lightheadedness, fatigue, nausea, and is often misdiagnosed. Its pathophysiology is multifactorial with primarily symptomatic management. Recent research has supported an autoimmune pathophysiology.

A 13-year-old Caucasian female presented in 2011 with severe thrombocytopenia and subsequently developed pancytopenia requiring transfusions. A hypocellular marrow was consistent with severe aplastic anemia (SAA). She received immunosuppressive therapy (IST) for 2 years and achieved a partial response with transfusion independence and resolution of neutropenia; however, thrombocytopenia persisted. Since 2015 while off IST, she developed frequent lightheadedness, shortness of breath, associated with facial warmth, paresthesia, digital cyanosis, tachycardia, and near-syncopal events leading to anxiety and extreme disruption of her daily activities. She also had chronic intermittent diarrhea with gastrointestinal discomfort. She was eventually diagnosed with autonomic dysfunction and POTS after a positive test for head-up tilt, Valsalva maneuver, and quantitative sudomotor axon reflex test.

An autoimmune dysautonomia antibody evaluation panel from Mayo Clinic was negative. Sera were sent to the University of Oklahoma Health Sciences Center for assay of POTS related antibodies. We postulated that the treatment for her SAA with an allogeneic hematopoietic stem-cell transplantation (allo-HCT) would also resolve POTS/dysautonomia if it were to be of autoimmune etiology. She successfully underwent a 10/10 HLA matched allo-HCT in 2019.

Pre-transplant activating autoantibodies (AAb) to the alpha1 and beta1 adrenergic receptors [GeneBLAzer (Invitrogen)] were significanlt elevated compared to normal controls (P<0.01) and decreased to control levels 1 and 8 months post-transplant with concurrent resolution of the POTS symptomatology. This case supports an important role of AAb in the pathophysiology of this patient’s POTS. It also presents a rarely recognized combination of SAA and POTS.

ADOLESCENT MALE WITH SPONTANEOUS STAPHYLOCCOCAL PYOMYSITIS

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Introduction Spontaneous pyomyositis resulting in bacteremia is uncommon, especially in a healthy adolescent male without immunodeficiencies or wounds. Here we present staphylococcal pyomyositis with disseminated disease and sepsis without history of penetrating trauma or preceding illness. Case Report A 16 year old male presented to the ED with worsening mid-thoracic back pain after sustaining a fall, without penetrating trauma, two days prior. CT abdomen was unremarkable. The patient was transferred to our facility for further workup and soon developed sepsis with fever to 40°C. Blood culture grew methicillin susceptible Staphylococcus aureus (MSSA). Thoracic spine MRI demonstrated paraspinal muscle edema and inflammation, a small inflammatory mass, and bilateral lung nodules. Echodochardiogram demonstrated a small, filamentous vegetation on the anterior leaflet of the mitral valve with associated insufficiency. Upon questioning the patient denied intravenous drug usage. Repeat thoracic spine MRI one week from the initial imaging showed extension of infection into the vertebral bodies and facet joint of T11-T12. A repeat echocardiogram one week later showed resolution of the mitral vegetation. Infection resolved with 6 weeks of IV antimicrobial therapy and he was discharged in stable condition with instructions for endocarditis prophylaxis.

Discussion Spontaneous bacterial myositis without penetrating trauma is rare. This patient’s non-penetrating muscular injury progressed to MSSA sepsis, endocarditis with pulmonary septic emboli and vertebral osteomyelitis. No identifiable risk factors for diffuse bacterial infection were identified: the patient was immunocompetent and denied a history of IV drug use or recent tattoos. Pyomyositis should not be excluded in patients presenting with severe back pain with or without penetrating trauma or risk factors.

AUTOIMMUNE ENCEPHALITIS: NOTHING TO BRUSH OFF

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Case Report An adopted 14-year-old Asian-American female presented with 2-week history of confusion after resolution of upper respiratory infection. Patient became combative and was subsequently intubated. MRI brain was unremarkable. CSF and serum were sent for infectious etiologies in addition to the Mayo Autoimmune Encephalopathy Panel - all were unremarkable. Toxicology workup was also
negative. Multiple anti-epileptic drugs (AEDs) were initiated. EEG showed a delta brush pattern (figure 1) as described by Schmitt et al in 2012 and listed as a diagnostic criterion for patients with anti-N-methyl-D-aspartate receptor encephalitis (NMDARE). She began the internationally recognized SickKids iBrainD Protocol for antibody-mediated inflammatory brain disease which consisted of IV immunoglobulin (IVIg), Rituximab, high-dose IV steroids, followed by a gradual oral taper. After clinical improvement on the above protocol, she was discharged to home with close neurology follow-up.

Discussion Anti-NMDARE is the most frequent known cause of autoimmune encephalitis. It demonstrates a female predominance with ~70% of patients experiencing viral prodrome followed by prominent psychiatric and neurologic symptoms of seizures and altered mental status. The mainstay of treatment includes a combination therapy of: IV steroid treatment followed by gradual oral taper, IVIg or plasmapheresis, and either rituximab or cyclophosphamide. Due to the unusual presentation of anti-NMDARE, treatment may be delayed. Anti-NMDARE could be misdiagnosed as behavioral/mental illness and studies demonstrate the best outcomes are seen in those started promptly on aggressive treatment.

KLEBSIELLA SPINAL DISCITIS COMPICATED BY A VENTRAL EPIDURAL ABSCESS IN A 15-YEAR-OLD IN THE ABSENCE OF RISK FACTORS OR SPONTANEOUS INFECTION: A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

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Case Report Spinal discitis (SD) with or without associated epidural abscess is a rare condition. There are two major recognized causes of SD. Firstly, introduction of infection locally during spinal interventions such as epidural catheter placement or paraspinal injections. Secondly, it can occur spontaneously due to conditions that result in bacteremia including injection drug use, dental abscesses, or infective endocarditis. Additionally, patients with co-morbid conditions including diabetes, HIV and cancer are at higher risk of the latter. The course of SD may be acute or chronic, and lack of specific symptoms may delay diagnosis. Staphylococcus aureus is the most common causative pathogen whereas gram negative infections are extremely uncommon.

We present an atypical case of SD in a previously healthy 15-year-old male with an unusual organism Klebsiella aerogenes, diagnosed by sequencing of microbial cell-free DNA in blood, while blood cultures remained negative. The clinical course was complicated by antibiotic resistance and subsequent development of a ventral epidural abscess, requiring readmission followed by surgical drainage and a prolonged course of antibiotics. Culture from surgical specimen from the abscess grew K. aerogenes, confirming the diagnosis.
**534 SYSTEMIC LUPUS ERYTHEMATOSUS**

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Case Report Systemic lupus erythematosus (SLE) is an autoimmune disorder that can lead to multisystem damage due to inflammation. It commonly presents with rash, arthritis, and fever but has a wide variety of presenting features that can appear either sudden or insidiously. We will detail a case from an outpatient perspective of a patient presenting with easy bruising, fatigue, and heavy bleeding who was subsequently diagnosed with SLE.

A 17 year old female presented to our outpatient general pediatrics clinic with a one week history of easy bruising, leg pain, and mild fatigue. The rest of her history was remarkable for heavy menstrual bleeding and a family history of SLE. Her maternal aunt who was present for the interview revealed that her own initial symptoms of SLE included severe thrombocytopenia. On exam, the patient had multiple large bruises as well as petechiae present throughout her body. She previously had a positive ANA screen and a follow up appointment scheduled with Rheumatology. She had bloodwork taken the morning of presentation to our clinic but due to a delay in processing her results were not available for two days. She was found to be pancytopenic with Hgb 5.0, platelet count of 3, and WBC 3.3. She was advised to go immediately to the emergency department where she was given multiple units of blood and platelets and eventually admitted to our PICU. Rheumatology and Hematology were involved in her care during her stay. Bone marrow biopsy confirmed ITP and labs confirmed SLE. She was given IVIG during her admission and started on Cellect and Plaquenil.

Systemic lupus erythematosus can present in a variety of ways depending on the age of onset and severity. Our patient, similarly to her aunt, presented with bruising, petechiae, and thrombocytopenia requiring immediate blood and platelet transfusions. Detailed family histories and a high clinical suspicion can help in the diagnosis of SLE in patients who are otherwise well appearing in the setting of alarming laboratory findings.

**535 ANTI-MYELIN OLIGODENDROCYTE GLYCOPROTEIN ANTIBODY ASSOCIATED MYELITIS IN A 4-YEAR-OLD FEMALE WITH HUMAN METAPNEUMOVIRUS**

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Case Report This case describes a 4-year-old female who presented with acutely progressive paraparesis and found to be positive for MOG IgG in the setting of Human Metapneumovirus infection.

Case Description A 4-year-old female presented to the ED with progressive lower extremity weakness and one week of fever, URI symptoms, and bilateral otitis media refractory to amoxicillin. LP showed CSF pleocytosis with normal protein. MRI brain and spinal cord showed T2 hyperintensities in central grey matter with continuous extension from C6 to L1. She was oriented with stable cardiorespiratory parameters. Neurological exam showed areflexia in bilateral upper and lower extremities, bilateral upgoing Babinski, and weakness in lower extremities with inability to bear weight. She had normal tone, intact sensation, and delayed but controlled bowel and bladder movements. Differential included Acute Flaccid Myelitis (AFM) and Transverse Myelitis (TM). Infectious workup showed PCR positive for Human Metapneumovirus (HMPV) and a positive serology for EBV nuclear antigen IgG. Treatment included 30 mg/kg/day IV methylprednisolone with concurrent plasmapheresis in conjunction with PT and OT. Her condition improved after five days of steroids and five plasmapheresis treatments to being able to ambulate with minimal assistance and pull to stand. After nine days, she was discharged home with mild weakness in lower extremities and reflexes able to be elicited in all extremities. Autoimmune results two weeks from collection showed positive serum MOG IgG with titers 1:100. In retrospect, the diagnosis of TM secondary to a Myelin Oligodendrocyte Glycoprotein Associated Disorder (MOGAD) was established.

Conclusion Radiological and clinical findings alone may not be sufficient to differentiate CNS demyelinating disorders. In our patient, AFM was unlikely given her quick responsiveness to treatment and MOGAD was established. Literature on MOGAD is increasing but further studies should continue to investigate factors that can guide management. Influenza, Epstein-Barr virus, and Varicella Zoster virus are known to be associated with anti-MOG antibodies. However, there are no known cases demonstrating a relationship between HMPV and MOGAD.

**536 PRECOCIOUS PUBERTY AND AN OVARIAN MASS: A RARE CASE OF MCCUNE ALBRIGHT SYNDROME**

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Case Report McCune-Albright Syndrome (MAS) is a rare genetic disorder characterized by a triad of polyostotic fibrous dysplasia, precocious puberty, and café-au-lait spots. In this case, a patient presented with precocious puberty in the setting of an ovarian mass, confounding the final diagnosis of MAS.

A 3-year-old girl presented with vaginal bleeding. She had a previous episode of vaginal bleeding, breast budding and a right ovarian cyst at 5 months of age. Work up at that time showed no abnormal findings and the ovarian cyst shrunk in size. On this evaluation, the patient’s mother noted dark red blood in the undergarments and raised darkened areola. Past medical history included a right spiral tibia/fibula fracture and left elbow fracture at 12 months of age. Her height was at the 89th percentile, and her weight at 99th percentile. Physical exam was significant for an elevated breast mound with palpable breast tissue bilaterally and darkened areola, consistent with Tanner stage 3. Residual blood was seen in the vaginal introitus. Notable labs included a normal inhibin B, low FSH, and high ultrasensitive estradiol. Pelvic MRI showed a 4.1 cm right ovarian cyst, which in the context of precocious puberty, raised suspicion for a juvenile granulosa cell tumor. Follow up pelvic MRI showed a decreased size of the ovarian cyst, the largest follicle measuring 1 cm, with no typical
features of an ovarian neoplasm; these features suggested an ovarian response to hormonal stimulation. On a subsequent visit several months later, mother noticed a cafe-au-lait macule on the right buttock. On follow up exam, the patient had a small cafe-au-lait macule on the chest and right buttock which were not present on initial evaluation. Further work-up to identify the source of hormonal hyperstimulation showed advanced x-ray bone age at 6 year 10 months, and multifocal polyostotic fibrous dysplasia involving bilateral femurs and right tibia.

Failure to include MAS in the differential has led to unnecessary oophorectomy in this patient population. Benign cysts in MAS should not be managed surgically due to the risk of likely recurrence and loss of fertility. Therefore, it is crucial to identify MAS as a cause of peripheral precocious puberty in order to guide proper management.

Case Report This case presents an example of the complexity of caring for adult survivors of chronic childhood conditions in pediatric hospitals. A 31 yo F with past medical history of depression, anxiety, bicuspid aorta, coarctation of the aorta, and hypertension presented to a pediatric hospital for routine cardiac catheterization and balloon dilation of coarctation by the adult congenital heart disease team. In the OR, her coarctation underwent balloon dilation and stenting. Postoperatively, patient developed significant agitation. She received one dose of hydromorphone and two doses of midazolam for agitation presumedly due to pain. She worsened and haloperidol and intravenous diphenhydramine were given. She did not improve, so she received second doses of diphenhydramine and hydromorphone. Internal Medicine-Pediatrics service consulted ‘stat’ to assist with management of agitation and concern for possible drug seeking behavior.

On exam, the patient was hypertensive (BP 169/110), tachycardic (HR150), tachypneic (RR38) with significant anxiety and agitation. She was alert and oriented to situation and surroundings. She was diaphoretic with diffuse abdominal tenderness and flushed skin. Ankle clonus and hyperreflexia of the lower extremities were elicited with a fine tremor of all extremities at rest.

Exam was concerning for a toxidrome vs drug reaction. On further review of home medications, several serotoninergic agents were identified (i.e. buspirone and escitalopram). Her symptoms met diagnostic criteria for serotonin syndrome. Patient ultimately required critical care with beta-blocker infusions and cyproheptadine antidote. She eventually stabilized with resolution of signs and symptoms.

Serotonin syndrome is uncommon and if untreated can have significant mortality. Reviewing patient history, medications, and social history is critical for diagnosis. The case was more complicated due to it occurring in a pediatric facility where serotonin syndrome is much less likely to occur. The case highlights the importance of internal medicine trained physicians available to manage adults at pediatric facilities.

Case Report We present the case of 9-month old African American (AA) twins, born at 34-week gestational age, whose work-up for failure to thrive showed not 1, but 2 nutritional deficiencies. The twins were exclusively breastfed and recently introduced to table food. They were admitted to our facility for failure to gain weight and low hemoglobin levels, requiring blood transfusion. The diet history was concerning as the infants did not receive supplementation during breastfeeding. Additionally, it was noted that the mother had not been taking supplementation herself during lactation. Laboratories for both patients showed microcytic anemia, iron studies and elevated Mentzer index confirmed the presence of Iron Deficiency Anemia (IDA). Further labs showed low normal calcium and phosphorus levels with elevation of alkaline phosphatase at 1182 unit/L and 892 unit/L in the twin girl and boy respectively. Parathyroid hormone levels obtained were elevated, hence the suspicion for rickets was high. Both infants underwent skeletal surveys which noted widening, cupping and fraying of the metaphysis of the long bones. Interestingly, the twin boy also had a rachitic rosary to the anterior ribs.

Vitamin D and iron deficiency are commonly encountered in predominantly breastfed infants with a maternal history of limited or no supplementation. In the U.S., rickets is more prevalent in children of AA descent, with low birth weight and children that breastfeed longer. Dube, K et all reported that IDA was seen in about 21% of healthy, breastfed infants, at 4 months of age and up to 6% during the second half of infancy. A deficit of iron and vitamin D in breastfed infants causes a broad spectrum of adverse effects on growth, development and performance with serious neurocognitive dysfunction. Given the adverse outcomes, a high index of suspicion for nutritional deficiency is necessary. This case highlights the importance of obtaining an explicit diet history in all infants and mothers. Both infants were started on ferrous sulphate 6 mg/kg/day and elemental calcium carbonate supplementation with 2000 U of cholecalciferol. They responded well with reticulocytosis and improvement of the biochemical picture of rickets and iron deficiency anemia, evident on labs at follow up.
embolism, so an urgent CTA was done. CTA of the chest showed extrinsic compression causing focal narrowing of the celiac artery, consistent with median arcuate ligament syndrome (MALS).

This patient had several potential etiologies for abdominal pain including endometriosis, IBD and IBS. Because many patients with celiac artery compression have mild to no symptoms, it is important all other causes of abdominal pain be ruled out before making a diagnosis of MALS.

Abdomen CTA confirmed narrowing of the celiac artery with collateral vessels noted between celiac and SMA. After complete evaluation and ruling out other common causes, a diagnosis of MALS was made. The patient underwent open laparotomy, ligament release and celiac artery angioplasty. Patient’s abdominal pain, nausea and vomiting improved post-surgery and repeat imaging showed no stenosis.

MALS is more common in young females with a classical triad of postprandial abdominal pain, epigastric bruist, and radiological evidence of extrinsic celiac compression. The treatment goal includes restoration of the blood flow in the celiac axis. Radiographic evidence of extrinsic celiac artery occlusion is observed in 10 to 24% of patients with no symptoms, so only symptomatic patients should be considered for surgery.

The patient presented here is unique because of the very young age of presentation. Her diagnosis was delayed due to the patient’s chronic pain from endometriosis and her ultimate diagnosis was found incidentally. The typical age of onset of MALS is between 30–50 years, but its also seen in children. Although MALS is a diagnosis of exclusion, it should always be considered when evaluating a pediatric patient with chronic abdominal pain.

Case Report 8 y/o female with PMH asthma presented to the ER with prolonged fever of unknown origin and anemia. Patient had been having daily fevers for nine days with a Tmax of 103F. Her associated symptoms included cough, rhinorrhea, sore throat, and diarrhea. She developed lower right-sided back pain and a petechial rash to her face and bilateral upper extremities two days prior to presentation. Her PCP was following closely and trended lab work during this period, noting anemia and thrombocytopenia, which prompted a referral for a higher level of care.

At the time of presentation, patient was ‘ill-appearing,’ anemic -H/H 6.9/21.2, thrombocytopenic -plt 91. Uric acid, LDH, and ESR/CRP were elevated. She was tachycardic and febrile, complaining of R flank pain. On exam, she was noted to have an erythematous facial rash and petechiae to her L arm. Heme/Onc was consulted, and CBC slide review on night of admission was concerning for new onset leukemia. She was admitted with IV fluids, allopurinol for possible tumor lysis syndrome, and Cefepime for neutropenic fever.

Bone marrow biopsy was negative for leukemia, blasts, abnormal B or T cell proliferation. Her ANA, dsDNA, and antiSmith Ab all returned positive. The rash on her face became more profound during admission. Rheumatology was consulted, and patient was subsequently diagnosed with SLE. She was started on Solumedrol; unable to start plaquenil at this time due to COVID pandemic shortage. Her hospital course was complicated by pancreatitis and hypertension. Her rash and pain began to improve prior to discharge. She is being followed outpatient by Pediatric Rheumatology and Nephrology.

Discussion SLE is the ‘great mimicker’ that can involve a multitude of organ systems with a slew of presentations. In childhood, there is an incidence of 0.3–0.9 per 100 children/years. Cytopenias are present in >50% of patients, which necessitates broad differential diagnoses; ruling out malignancy is of paramount importance. The most common antibody of diagnosis is ANA, present in >95% of cases. Specifically to our patient, pancreatitis is a rare but documented consequence of SLE in pediatric patients. Treatment consists of NSAIDs, steroids, and immunosuppressant agents in addition to supportive care for SLE-associated side effects.

540 THE GREAT MIMICKER: SLE MASQUERADING AS ACUTE LEUKEMIA

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Introduction Infants may have incidental thrombocytosis. Platelets are often nonspecific acute phase reactants elevated in inflammatory conditions. A study regarding thrombocytosis and neonates concluded that extreme thrombocytosis did not appear to have a significant increase in risk of thrombotic or hemorrhagic event. We describe an infant with thrombocytosis that proved to be detrimental.

Case Presentation A 3-month-old infant presented with resolved fevers in the setting of 4 days of congestion with mild conjunctivitis followed by watery diarrhea. The infant’s poor oral intake prompted a medical evaluation. Sick contacts included the mom’s roommate who had COVID.

On exam, the neonate was afebrile and tachycardic. She was well appearing but had a right 1 cm mobile posterior cervical lymph and delayed capillary refill. Bloodwork revealed a leukocytosis 26 k/uL, extreme thrombocytosis 1,154 k/uL and a negative COVID pcr and IgG. Due to concern for COVID exposure, multisystem inflammatory syndrome and her thrombocytosis, an echocardiogram was performed and found giant left anterior descending and right coronary artery aneurysms (z-score >6).

The neonate was diagnosed with incomplete Kawasaki disease (KD) and treated with IVIG, methyprednisolone, aspirin and Lovenox. An echocardiogram a week later showed decrease in size of the aneurysms.

Discussion Subjective fevers and decreased oral intake are common symptoms in pediatrics. However, in our infant the extreme thrombocytosis signaled that something less benign than a viral illness may be underlying. The Harada score is a tool developed in Japan to identify children with increased risk of developing coronary artery aneurysm. This tool uses 7 criteria: platelets, white blood cells, CRP, age, gender, hematuria, and albumin. It uses thrombocytopenia as a marker rather than thrombocytosis. Even though the majority of patients do present with thrombocytopenia with thrombocytosis being a late finding, infant presentations of KD may be more subtle and may cause delayed treatment.
Conclusion Though mild thrombocytosis is frequently considered a reaction to a current illness, extreme thrombocytosis should not be ignored and incomplete KD should remain high in the differential.

Case Report Chronic mercury poisoning is a relatively uncommon diagnosis that presents with a wide range of symptoms after prolonged contact with mercury vapors and fumes. We present the case of a young man who presented with a prolonged course of broad non-specific symptoms after 2 months of mercury exposure.

Discussion Mercury poisoning presents with a wide and systemic range of symptoms allowing it to masquerade as numerous other disease processes including infections and systemic inflammatory conditions. Chelation therapy can help improve numerous symptoms within a year, however some neuromuscular symptoms, was negative as was the workup for toxic ingestions. Heavy metal results revealed a mercury blood level of 62 ug/L (<10 ug/L reference range) and a 24 hour urine mercury level of >500 mcg/L (toxic level >100 mcg/L). Chelation therapy was initiated inpatient and continued as an outpatient with some improvement in symptoms. The EPA was contacted for clean up of the residence prior to the family being allowed to return.

Discussion Mercury poisoning presents with a wide and systemic range of symptoms allowing it to masquerade as numerous other disease processes including infections and systemic inflammatory conditions. Chelation therapy can help improve numerous symptoms within a year, however some neuromuscular symptoms can persist depending on the dose/duration of exposure, delayed chelation, and individual variability. It is important to involve the EPA in the work up of mercury poisoning as they can perform an environmental evaluation to assist and ensure patients do not return to areas with high levels of mercury.

Case Report Kawasaki Disease (KD) is an acute febrile inflammatory disease that affects medium-sized vessels. Children with KD can have unusual neurological manifestations. A 19-month old female presented with a one-day history of fever for 8 days. Her past medical history was significant for Group A Streptococcal pharyngitis treated with amoxicillin five days prior to admission. On examination, she appeared listless and had a waddling gait. The remainder of the physical exam was negative. Laboratory studies showed mild hypoalbuminemia, anemia and thrombocytosis. C-reactive protein and erythrocyte sedimentation rate were both elevated at 17 mg/dl and 115 mm/h respectively. Urinalysis was normal. COVID-19 PCR was negative. A PCR respiratory pathogen panel was positive for rhino-enterovirus. CSF studies were normal except for positive HHV-6 on PCR multiplex. Brain magnetic resonance imaging demonstrated a small pineal gland cyst. Neck magnetic resonance imaging showed cervical adenopathy and tonsillar hypertrophy. During the course of her admission, the patient developed a maculopapular rash which resolved along with her fever. Ataxic gait and neck symptoms improved significantly by the end of her hospital course.

The absence of a localized suppurative process associated with significant elevation of inflammatory markers was not typical for HHV-6 or rhino-enterovirus infections which prompted us to consider atypical KD. EKG was obtained which showed borderline prolonged QT interval. Echocardiogram demonstrated dilation of coronary arteries supporting the diagnosis of atypical KD. The patient was treated with intravenous immunoglobulin and eventually discharged on low-dose aspirin. SARS-COVID-19 IgG antibody test was negative.

Discussion There is increasing evidence of neurological symptoms as a manifestation of atypical KD. The patient had many possible etiologic agents for her symptoms. A high index of suspicion was exercised to reach the diagnosis particularly with ataxia being an unusual presentation. Clinicians should be aware of neurological symptoms, such as ataxia in the setting of prolonged febrile illness, as a potential manifestation of atypical Kawasaki disease.

Case Report A 10 day-old male was brought to the emergency department (ED) by his mother for evaluation of new skin lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery. He was seen by his pediatrician for a weight check at 10 days of life and was noted to have scattered pustular and vesicular lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery. He was seen by his pediatrician for a weight check at 10 days of life and was noted to have scattered pustular and vesicular lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery. He was seen by his pediatrician for a weight check at 10 days of life and was noted to have scattered pustular and vesicular lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery. He was seen by his pediatrician for a weight check at 10 days of life and was noted to have scattered pustular and vesicular lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery. He was seen by his pediatrician for a weight check at 10 days of life and was noted to have scattered pustular and vesicular lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery. He was seen by his pediatrician for a weight check at 10 days of life and was noted to have scattered pustular and vesicular lesions. He was born full-term via routine delivery and had an uneventful stay in the newborn nursery.
infection of the neonate is uncommon in the United States, with an incidence rate of 5–33 per 100,000 live births. However, when present, it can result in sepsis and neurologic devastation if not detected and managed appropriately. This case emphasizes how attention to physical exam findings can result in the prompt diagnosis and effective management of a potentially devastating illness.

SUCCESSFUL USE OF A HUMERUS INTRAOSSEOUS LINE DURING INFANT RESUSCITATION

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Case Report To describe the successful use of humeral intraosseous catheter in an infant

Methods Descriptive Case Report

Summary A three-month-old male infant presented to an emergency department with lethargy and a purple rash resembling bruising. Purpura and mottling were noted. The unresponsive infant rapidly became apneic and pulseless; CPR was begun and he was intubated. Peripheral venous access attempts were unsuccessful. Bilateral [SJZ] tibial IOs were placed but failed during the resuscitation. Return of spontaneous circulation (ROSC) was achieved. A pediatric critical care transport arrived and the infant had another 20 minute cardiac arrest. A 15 g intraosseous needle was placed using an EZ-IO drill in the right proximal humerus after an unsuccessful IO attempt in the femur. After securement of the catheter, the team administered epinephrine, normal saline and calcium chloride before ROSC. The patient received additional saline, calcium chloride, sodium bicarbonate, hydrocortisone, albumin and dextrose boluses through the IO catheter. An epinephrine infusion was started using the IO. A double lumen external jugular catheter was then placed, and a norepinephrine infusion and a packed red blood cell transfusion were given. During transport, both the jugular catheter and the IO were used for the vasopressors and fluids. Shortly after PICU arrival, the patient had another cardiac arrest and expired after ongoing CPR. Postmortem lumbar puncture was positive for Neisseria meningitidis in the cerebrospinal fluid (CSF) PCR. Close examination of the CSF Gram stain revealed one gram negative diplococcus within a white blood cell.

Conclusions During medical emergencies, vascular access is vital. IO access is a potentially lifesaving route for the administrations of fluids, blood products, and medications. While lower extremity placement of IOs is most common in children the humerus is often used in adolescents and adults. Although the patient did not survive to assess for complications, the humerus represents an alternate IO site when lower extremities are not an option in infants and young children with life-threatening emergencies.

ANEMIA AS AN INITIAL PRESENTATION OF CYSTIC FIBROSIS IN INFANCY

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10.1136/jim-2021-SRMC.546

Case Report Cystic fibrosis (CF) is a genetic disorder of ion transport with a myriad of complications. Anemia is a rare initial manifestation, as described by small number of publications. However, anemia is not commonly linked to CF, and respiratory or endocrine manifestations are more readily recognized. Failure to recognize CF as a cause of anemia could lead to delays in proper diagnosis and treatment initiation.

Two infants for whom anemia was a presenting sign are described. Both patients were members of an Old Order Amish community and were suspected to be distant relatives. They were both born at home and did not receive any medical care prior to the discussed presentations.

The first case is a 2-month-old boy born to consanguineous parents (second cousins). He presented with anemia (hemoglobin 7.7 g/dL), an acrodermatitis enteropathica-like rash, and severe malnutrition. Shortly after presentation, he developed septic shock with multi-organ failure. After recovery, he was diagnosed with CF by sweat chloride testing. He was homozygous for delta F508.

The second patient is a 3-month-old boy born to consanguineous parents (second cousins once removed). He presented with anemia (hemoglobin 5.9 g/dL), respiratory distress, and severe malnutrition with poor feeding. He was treated as viral bronchiolitis but required prolonged respiratory support. He also had positive sweat chloride testing and was also found to be homozygous for delta F508.

It is known that gene modification can alter the phenotype of CF, particularly the degree of respiratory compromise. It could be that certain modifier genes or environmental modifiers may also contribute to the described infants’ atypical presentations as they were both homozygotes for delta F508 and were of a similar genetic background.

The etiology of early anemia in CF is likely related to nutritional status in a multi-factorial way. The anemia could involve a combination of protein malnutrition and deficiencies in vitamins A, E, and K. This array of factors could contribute to the poor definition and under-recognition of anemia as a presenting sign of cystic fibrosis. Understanding and awareness of this physiology must be increased, and CF needs to be included on the differential diagnosis for patients, particularly infants, presenting with anemia.

Abstract 544 Figure 1 Vesicular Lesion on Back
WHEN BRONCHIOLITIS DOESN'T MAKE SENSE: ALVEOLAR HEMORRHAGE IN AN INFANT WITH UNDIAGNOSED WISKOTT-ALDRICH SYNDROME

A Tran*, KM Galipp, L Parker, R Shah, J Jouneycake, CK Walsh. Oklahoma University Medical Center, Oklahoma City, OK

10.1136/jim-2021-SRMC.547

Case Report Wiskott-Aldrich Syndrome (WAS) is a recessive X-linked syndrome characterized by atopic dermatitis, impaired humoral immunity, thrombocytopenia, and autoimmune disease. We present a case of diffuse alveolar hemorrhage initially thought to be bronchiolitis.

A 4-month-old late preterm male with history of congenital thrombocytopenia and eczema presented with respiratory distress, hypoxia, cough, petechiae, and painful rash on day of illness (DOI) 5. He had no fever, congestion, or rhinorrhea. Rapid RSV was positive, but viral PCR including RSV and SARS-CoV-2 was negative. Admission labs were notable for thrombocytopenia (54 K/mm3), and otherwise normal leukocytes (9.8 K/mm3), hemoglobin (11.4 g/dL), and CRP (4.9 mg/L). Chest radiograph showed interstitial changes suggesting chronic lung disease. Hypoxia worsened on DOI 6 requiring critical care admission and escalation of oxygen to high flow nasal cannula. Dermatology diagnosed his rash as eczema with viral exanthem. His clinical course and radiographic finding of interstitial changes were not consistent with bronchiolitis and prompted a chest CT on DOI 8 that demonstrated extensive patchy bilateral ground glass opacities consistent with diffuse alveolar hemorrhage. PT, PTT, D-dimer, and Factor VIII activity were normal. Peripheral smear showed small scant platelets. Immunoglobulins were mildly elevated. Oxygen was weaned off by DOI 23. PJP prophylaxis was started due to mild neutropenia with presumed WAS diagnosis. Genetic testing confirmed the diagnosis of WAS.

The WAS gene mutation results in a spectrum of syndromes including Wiskott-Aldrich syndrome, X-linked thrombocytopenia and X-linked neutropenia. WAS includes thrombocytopenia, atopic dermatitis, recurrent infections, and autoimmune diseases which rarely can include pulmonary capillaritis leading to diffuse alveolar hemorrhage. Here the initial diagnosis of RSV bronchiolitis was misleading, but a high index of suspicion with an atypical course lead to diagnosis and appropriate treatment and follow-up for WAS.

A UNIQUE NEONATAL CHEST WALL ANOMALY WITH COMPLETE STERNAL CLEFT AND AN EXTRATHORACIC MASS

1A Tufton*, SCheang, F Gray, D Gottlieb-Sen, GMundinger, S Pridjian, S Yang, 1Surcouf. 1LSU Health Sciences Center New Orleans, Louisiana State University Health Sciences Center, New Orleans, LA; 2USC University Hospital, Los Angeles, CA; 3University of California, Los Angeles, CA; 4Johns Hopkins Medicine, Baltimore, MD, 5Tulane University School of Medicine, New Orleans, LA

10.1136/jim-2021-SRMC.548

Case Report Sternal cleft is a rare congenital anomaly with incidence of roughly 1 in 100,000 live births and is due to the failure of the sternum to close during embryonic development. We present a case of a full-term female born via normal vaginal delivery to a G1P0 mother. Fetal echocardiogram was concerning for chest wall under development but with no evidence of ectopia cordis. Postnatally, a large closed midline sternal defect with a small 1.5 cm X 1 cm pedunculated non-pulsatile extrathoracic mass was observed. The infant was hemodynamically stable and non-dysmorphic. An echocardiogram revealed cardiac dextroposition, a PFO, small PDA, and a persistent left SVC but otherwise structurally normal heart. CT of the chest was consistent with a complete sternal cleft. Chromosome microarray and whole exome sequencing did not identify any potentially pathogenic genes. On day of life 9, the patient underwent a sternal reconstruction with advancement of the sternum primordia and primary closure in the midline. The midline mass was found to have a stalk that had an origin in continuity with the capsule of the liver and was resected. There was no identifiable diaphragmatic hernia or defect. Pathology of the mass demonstrated mesenchymal tissue consistent with primordia of the sternum. She had an uncomplicated postoperative course and was discharged 4 days after surgery. The pathologic finding seen in our patient is likely secondary to an embryologic mesenchymal failure involving the septum transversum resulting in the anomaly of the sternum and liver. It is important to note that further investigation is warranted in patients with sternal clefts to assess for the presence of other anomalies given its association with pentalogy of Cantrell and PHACES syndrome. Repair in the newborn period is advantageous owing to a very compliant and flexible chest wall and also allows for the use of native tissues which have the capacity to grow over time.

STROKE OF BAD LUCK

1P Upadhyay*, 2CR Briones, 2TM Tran, 1EH au c k . 1Our Lady of the Lake Regional Medical Center, Baton Rouge, LA; 2Tulane University School of Medicine, New Orleans, LA

10.1136/jim-2021-SRMC.549

Introduction Electronic cigarettes (e-cigarettes), or ‘vapes,’ have rapidly become the most common tobacco product used by high schoolers since 2014 with an increasing rate of use. The addition of marijuana in e-cigarettes has also become increasingly popular with high school students demonstrating a 2.5-fold increase in marijuana vaping from 2017 to 2018 alone. Due to the recent introduction of e-cigarettes to the market, only a limited number of studies have documented the adverse effects of vaping with even fewer exploring the association between marijuana-containing e-cigarettes and stroke in children.

Case Description We present the case a 17-year old male presenting to the emergency department with aphasia. A non-contrast computed tomography of his head demonstrated loss of grey-white differential in the left frontal and temporal lobes, and magnetic resonance imaging of his head revealed an ischemic infarct with a left middle cerebral artery (MCA) distribution involving the left temporal and parietal lobes. With no past medical history, a non-contributory family history, and a negative thrombophilia and hypercoagulable workup, the diagnosis of left MCA infarction was attributed to frequent e-cigarette use in the absence of other identifiable risk factors.

Discussion Although e-cigarettes are advertised as a safer alternative to traditional cigarettes, the claimed 95% harm reduction by the e-cigarette industry compared to traditional cigarettes has not been documented in evidence-based literature. Although some studies have explored mechanisms relating e-cigarettes and marijuana to stroke, there is still not enough evidence to definitively label vaping as a causative risk.
factor for stroke in children. As the prevalence of vaping continues to rise in younger populations, physicians are encouraged to thoroughly investigate important elements in vaping patterns. This includes, but is not limited to, total duration of vaping, frequency of vaping, and components of the vaping cartridge.

Case Report

Incontinentia Pigmenti (IP) is a disorder affecting development of ectodermal tissue. IP displays X-linked dominant inheritance, and is therefore lethal in males, often accompanied by a history of maternal miscarriages. IP can be recognized by a characteristic skin presentation with four stages spanning across life: Vesicular, Verrucous, Hyperpigmented, and Atrophic. We present a case of a newborn female with distinct rash, consistent with IP.

A 6-day-old female presented to our clinic for her newborn visit. She was born full term to a G3P2012 mother with an uneventful nursery course. Soon after birth, a vesicular rash with hyperpigmented macules on both legs developed. At her newborn visit, the rash had spread in an unusual linear pattern along her body. By follow up at 2 weeks of life, crusting formed with hyperpigmentation where the original vesicles were located. Given the worsening appearance in a distinct linear pattern, they were referred to dermatology where the diagnosis of IP was made.

IP presents in females with a characteristic rash that evolves throughout life. The 1st stage presents in the newborn period, consisting of papulo-vesicles along the Lines of Blaschko. Within a few weeks, the rash enters its 2nd phase when verrucous plaques replace the previous vesicles. The 3rd stage begins when the plaques are replaced by hyperpigmented, whorled lesions that persist until adolescence. The 4th stage is characterized by atrophic areas on the extremities. In addition to cutaneous findings, patients with IP have varying expression of potentially debilitating ophthalmologic and neurologic abnormalities.

IP is most often diagnosed clinically based off a series of major and minor criteria. In the absence of a family history, our patient meets major criteria with the presence of skin findings along the Lines of Blaschko further supported by a maternal history of spontaneous abortion. Genetic testing confirmed her diagnosis, detecting a deletion on the IKBKG gene. Thus far, our patient is doing well, however, this case highlights the importance of raising awareness of this potentially severe systemic disease that often presents solely as a newborn rash.

Case Report

A twenty-year-old female with Philadelphia chromosome-positive acute lymphoblastic leukemia presented with one day of fever and a mild cough. Her vital signs on presentation were: temperature 102.8°F, heart rate 124 beats/minute, respiratory rate 22 breaths/minute, blood pressure 131/77 mmHg, and oxygen saturation 100% on room air. She was not in respiratory distress on exam and lung auscultation revealed diminished air entry to the right lower lung field.

Chest radiograph demonstrated a moderate-to-large right pleural effusion with basilar consolidation and atelectasis. Her white blood cell count was 900/µL. Her absolute neutrophil count (ANC) was 486/µL and her absolute lymphocyte count was 300/µL. She was also anemic (hemoglobin of 8.8 g/dL). Peripheral and central aerobic and fungal blood cultures remained negative.

She was given intravenous ceftriaxone and continued on intravenous vancomycin and cefepime on admission. A nasopharyngeal specimen was obtained for SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) polymerase chain reaction (PCR) testing which resulted positive. Her chemotherapy, including dasatinib and 6-mercaptopurine, was held. She was continued on oral trimethoprim-sulfamethoxazole for Pneumocystis jirovecii prophylaxis and transfused 10 cc/kg of packed red blood cells.

She was started on oral hydroxychloroquine for five days. On HD 4, vancomycin and cefepime were replaced with intravenous meropenem and clindamycin. Trimethoprim-sulfamethoxazole was held to minimize myelosuppression.

Due to persistent fever and neutropenia, she was started on empiric intravenous ceftriaxone. On HD 8, she became afebrile though repeat SARS-CoV-2 PCR remained positive. The persistent pleural effusion prompted an ultrasound-guided thoracentesis on HD 14. Six hundred milliliters of pleural fluid were removed. Bacterial and acid-fast bacilli cultures from the pleural fluid remained sterile and broad-range bacterial PCR and sequencing were negative.

She was discharged on HD 15 with ceftriaxone for 10 days and intravenous meropenem with oral clindamycin for two weeks. On the day of discharge, a third SARS-CoV-2 PCR remained positive, her white blood cell count was 3,000/µL (ANC 1100/µL), hemoglobin was 10.6 g/dL, and platelet count was 225,000/µL.

Perinatal medicine

Joint plenary poster session

4:30 PM

Thursday, February 25, 2021

Abstracts

550 READING BETWEEN THE LINES: A GENETIC DISORDER IDENTIFIED BY A DISTINCT, Patterned RASH

A Willis*, J Deyo, M Bolton, A Uzodi. Our Lady of the Lake Regional Medical Center, Baton Rouge, LA

551 COVID-19 ASSOCIATED PARAPNEUMONIC EFFUSION IN A NEUTROPENIC PATIENT WITH LEUKEMIA

A Willis*, J Deyo, M Bolton, A Uzodi. Our Lady of the Lake Regional Medical Center, Baton Rouge, LA
stay. Incidence of AKI is high as 38% in extremely preterm infants. There is a need to identify potentially modifiable risk factors for AKI. Infants receiving invasive ventilation increase in mean airway pressure (MAP) decreases right ventricular output. In animal models, high MAP decreases venous return & decreases cardiac output. We hypothesize that high MAP in the first week of life is associated with increased risk of AKI. We also hypothesize that high peak end expiratory pressure (PEEP) is associated with increased risk of AKI.

**Methods Used** Retrospective chart review for infants with birth weight (BW) <1500 grams on invasive ventilation. We had 20 cases as infants with AKI in the first week of life and 20 controls with no AKI. AKI was based on KIDDO classification. Continuous variables are analyzed using independent samples t-tests or independent samples difference of medians as appropriate. Categorical variables are compared using Pearson’s chi-square or Fisher’s exact statistic. Primary outcomes of MAP and PEEP are compared between AKI and non-AKI groups. Demographic information like age, race, and maternal age, Apgar scores at 1 and 5 mins of life, mode of delivery, antibiotics, sepsis, presence of PDA, use of inotropic agent(s) and severe intraventricular hemorrhage.

**Summary of Results** Mean gestational age (GA) in the AKI group vs non-AKI group was 24.6 vs 24.8 weeks. Mean BW in AKI vs non-AKI group was 650 vs 710 grams. Sixty percent male infants were found to have AKI in the first week of life. Fifty percent received vasopressors in the AKI group. We found no statistical significant difference between MAP in AKI (mean 1.2 cm) and non-AKI (mean 0.605 cm) in the first week of life (p=0.46). Though there was a trend towards higher PEEP in AKI group (p= 0.08). AKI group has a higher 1.5 cm average PEEP as compared to non-AKI group.

**Conclusions** This pilot study showed that mean airway pressure in invasively ventilated very low birth weight infants was not associated with acute kidney injury during the first week of life. However there was trend towards higher peak end expiratory pressure in infants with AKI as compared with infants without AKI.

**Abstract 553 Figure 1** National gastrochisis (GS) data were extrapolated from combined numbers of omphalocele (O) and GS for 1994–2004 using ratio GS/(GS+O) from 2005–2017. Ratio = 0.76

**553 TRENDS OF GASTROCHISIS IN SOUTHWEST ALABAMA OVER 27 YEARS**

M Batra*, H Alemayehu, C Hartin, F Eyal, M Zayek. University of South Alabama, Mobile, AL

10.1136/jim-2021-SRMC.553

**Purpose of Study** Reports from worldwide surveillance systems have documented an increase in the prevalence of gastrochisis (GS) since the 1980s. In United States, the latest report from CDC published in 2016 showed a similar increase from 1995–2012. However, National Vital Statistics (NVS) data indicate a recent decline in its prevalence (30 to 24 per 100,000 births, from 2012 to 2017). Thus, we wanted to determine if similar decline has occurred in our referral area, Southwest Alabama (SW-AL).

**Methods Used** In addition to NVS data, we collected demographic data from Alabama Vital statistics, 1991–2004 by using ratio GS/(GS+O) from 2005–2017. Ratio = 0.76

**Summary of Results** Over 27 years, the rise in the prevalence of GS in SW-AL was similar to the national figures. In contrast to the national trend, the prevalence of GS in our region continued to rise from 2012 to 2017 (figure 1). This recent regional increase in GS prevalence occurred despite a marked decline in teenage birth rates, a major risk factor of gastrochisis (22.5%, 12%, and 7.5% of all births in 1991, 2012 and 2017, respectively). In addition, the prevalence of GS among teenage pregnancies have remained high but stable over the study period.

**Conclusions** Divergence between regional trends in prevalence of GS and rates of teenage births suggest that young maternal age could be a surrogate for other risk factors. Further studies are warranted.

**554 EFFECT OF MULTIMODAL STIMULATION WITH LIVE MUSIC THERAPY ON PRETERM INFANTS IN THE NICU**

1T Borcky*, 1S Desai, 2T Brown, 3K Upadhyay, 1AJ Talati. 1UTHSC, Memphis, TN; 2Le Bonheur, Memphis, TN; 3Univ of Washington, Seattle, WA

10.1136/jim-2021-SRMC.554

**Purpose of Study** The high intensity noise in a NICU environment can be detrimental, while soothing sounds and touch (multimodal stimulation—MTMS) can improve brain development. We sought to observe effect of live music therapy with MTMS on vital signs and cardiorespiratory symptoms of preterm infants with postmenstrual age (PMA) >32 weeks.

**Methods Used** A retrospective chart review was done for preterm infants with PMA >32 wk and admitted in our level IV NICU from May 2018-December 2019. Infants were eligible if they received MTMS sessions. Music therapist performed live music sessions along with MTMS. Data were collected regarding demographic characteristics and cardiorespiratory events, 2 hr before and after the MTMS sessions. These included heart rate (HR), respiratory rate (RR), blood pressure, oxygen saturations, need for supplemental oxygen, respiratory support, adverse cardio-respiratory events (defined as bradycardia <100/bpm, tachycardia >180/bpm and/or desaturations <90%).

**Summary of Results** Total 156 sessions of 15 minute sessions of MTMS were performed on 53 infants during this period. The median GA was 27 (22–36) wk and mean BW was 1344 g (±891). 43% of infants were female and 32% were small for gestational age. The median day of life during session was 86 (11–300) and mean weight was 2700 g (±1200). During
60% (94/156) MTMS sessions, infants were on respiratory support and remained on the same support after the session as well, except one patient was changed to high flow nasal canula from CPAP. We noticed a 15% reduction in the baseline HR during 23% (36/156) of sessions while 15% increase was noted in 8% (12/156). Improvement in oxygen saturation (5%) was noted during 15% (24/156) of sessions with worsening in only 5% and reduction in supplemental oxygen in 14% (22/156) of sessions. In addition, we also noticed a decline [532% (50/156)] in cardiorespiratory adverse events, within 2 hours after the session.

**Conclusions**

Preterm infants (>32 weeks PMA) tolerated live music therapy with MTMS sessions with over half of infants exhibiting no change in vital signs, with improvement in a quarter of babies. Improvement in cardiorespiratory events were observed in one third of our cohort. Larger studies are warranted to show impact of MTMS in this population.

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**Abstract 555 Table 1**

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**Summary of Results**

The only covariable found to be significant with multivariable logistic regression was birth weight for LOS; no covariables were found to be significant for NEC. The results for LOS +BW as a covariable improved the MPV/PLT accuracy to 79% and AUC 0.82. See figure 1 for further details on each covariable.

**Conclusions**

MPV/PLT was significantly predictive and moderately accurate for early recognition of a LOS. Similarly, I/T was mildly predictive but not very accurate in the assessment of NEC. No biomarker was found to be highly accurate in the early recognition of LOS or NEC. Further efforts will focus on assessing possible combinations of biomarkers and on identifying cutoff values to optimize predictability and accuracy.

---

**Abstract 556**

**Purpose of Study**

CBC biomarkers have been found to be helpful in the evaluation of other populations. The purpose of this study was to analyze the utility of biomarkers in patients with confirmed LOS and NEC to hopefully decrease unnecessary antibiotic exposure, and/or avoid feeding interruptions.

**Methods Used**

Retrospective cohort study examines neonates admitted to the NICU from 2014–2019 with birth weights <1750 g. From our 745 patient database, 75 patients with LOS, 54 with NEC, and 144 controls were identified. The CBC done on the day of the subsequently positive blood culture or radiographic evidence of NEC was used for the study. Control group included infants with a CBC and blood culture for clinical concerns but without NEC or LOS. The biomarkers were: WBC, ANC, I:T, RDW, NLR, MLR, PLR, and mean platelet volume to platelet ratio. We used univariable and multivariable logistic regression with either LOS or NEC as the dependent variable and each biomarker as an independent variable.

**Conclusions**

Preterm infants (>32 weeks PMA) tolerated live music therapy with MTMS sessions with over half of infants exhibiting no change in vital signs, with improvement in a quarter of babies. Improvement in cardiorespiratory events were observed in one third of our cohort. Larger studies are warranted to show impact of MTMS in this population.

---

**Abstract 556**

**Purpose of Study**

Our lab previously showed that intranasal administration of insulin (InInsulin) immediately after hypoxia-ischemia (HI) exposure provided neuroprotection in the neonatal HI rat model. The results of our studies strongly suggest that InInsulin could be a novel therapeutic agent to treat term human infants with a HI event. To acquire pharmacokinetic and safety data before pre-clinical studies in large animal models of HI, we designed this study to test the hypotheses that InInsulin will diffuse in the brain in a dose- and time-dependent manner and not cause hypoglycemia in 10 days old (P10) neonatal rats.

**Methods Used**

At P10, Sprague-Dawley rat pups were randomly divided into four groups: Vehicle; 5, 15, and 50 μg of rhInsulin. The male and female ratio was kept equal. Pups received either intranasal recombinant human insulin
(rhInsulin) (5, 15, or 50 µg) or an equivalent volume of vehicle (phosphate-buffered saline) to both nostrils of rats. Animals were sacrificed at 15 minutes, 1 or 4 hours after rhInsulin administration to each group to determine rhInsulin levels in different brain regions by ELISA. Statistical analysis was performed via two-way ANOVA followed by the Student-Newman-Keuls method. The sample size was estimated using power analysis to obtain a difference of 30% between means with a power of 85% and a significance of p < 0.05.

Summary of Results rhInsulin was not found to affect body weight or body temperature, nor did it cause hypoglycemia. rhInsulin distribution was detected in a dose- and time-dependent manner in different brain regions and spinal cord. rhInsulin levels peaked at 15 minutes and then gradually decreased over time. The 50 µg group maintained a higher concentration of rhInsulin over all time intervals. Serum rhInsulin was noted only at 15 minutes following 15 and 50 µg dose within the physiologic range of insulin in newborn rats; (p < 0.05, n = 3/sex/groups/all results).

Conclusions The intranasal route effectively delivers rhInsulin to the brain and spinal cord in a dose- and time-dependent manner. The current study results suggest that intranasal administration of rhInsulin could be safely used in brain and spinal disorders in neonatal rats.
EXTERNAL VALIATION OF AN EXTUBATION SUCCESS PREDICTION MODEL FOR VERY PRETERM INFANTS

1R Dryer*, 1,2A Salem, 1,2V Saroha, 1,2M Rysavy, 1,2S Chawla, 1,2RMP Patel. 1Emory University, Atlanta, Georgia; 2Children’s Healthcare of Atlanta Inc, Atlanta, GA; 3Wayne State University School of Medicine, Detroit, MI; 4University of Iowa, Iowa City, IA

Purpose of Study To externally validate an extubation readiness estimator (www.extubation.net) and assess its performance in predicting extubation success in very preterm infants.

Methods Used We conducted a retrospective cohort study over a 10-year period at a single center. We included inborn infants with a birth weight ≤ 1250 grams that had a planned initial extubation before 60 postnatal days. Extubation success was defined as survival for ≥ 5 days without an endotracheal tube. Model performance was evaluated with the area under the receiver operating curve (AUROC) and calibration plots.

Summary of Results We evaluated 170 infants, of whom 120 (71%) had extubation success. The median (IQR) gestational age was 26.8 weeks (25.3–28.4), weight at extubation was 917 g (760–1050), and postnatal age at extubation was 3.5 days (IQR 2.1–9.0). The discrimination of the model (AUROC) was 0.73 (95% CI 0.65–0.81), and a linear fit line of the calibration plot had a slope of 0.94, y-intercept of -0.01, and R² of 0.84 (figure 1).

Conclusions The extubation readiness estimator demonstrated reasonable performance in this external cohort of infants, supporting its potential utility. Additional studies are needed to determine if its performance can be improved.

GLUCOSE HOMEOSTASIS IN EXTREMELY LOW BIRTH WEIGHT INFANTS DURING THE FIRST HOUR (GOLDEN HOUR) AFTER BIRTH

J Esmail*, R Dhanireddy. The University of Tennessee Health Science Center College of Medicine, Memphis, TN

Purpose of Study Study the incidence of hypoglycemia at admission in ELBW (<1000 g) infants, the number of infants who had blood glucose determination and received IV glucose within the first hour after birth (golden hour), and assess clinical outcomes at discharge between hypoglycemic vs euglycemic infants.

Methods Used Data were collected and analyzed from 244 infants born during 2017–2020 with a birth weight of ≤1000 g at the Regional One Health NICU, Memphis, TN. The following data were collected: Time to first blood glucose determination and IV glucose administration (bolus and/or IV infusion) along with outcomes data at discharge.

Summary of Results Mean GA was 26.2 ±2.4 weeks; birth weight 739 ±161 g. The median time (IQR) to first glucose determination was 56 (45–73) min, and the median time for initiation of IV fluids or giving bolus dextrose was 88(60–120) min. Within the golden hour, only 59% of all infants...
had their first blood glucose determination, and 24% had IV glucose administered, (figure 1). 123 (51%) had hypoglycemia (<47 mg/dL), and 91 (37%) had severe hypoglycemia (<40 mg/dL). There was no difference in the time to first glucose screening and/or IV glucose administration between the 2 groups. Significant factors that put infants at risk of severe hypoglycemia included C-section, IUGR, and β-Blocker use, (all had p<0.005). The composite mortality or major morbidity (BPD, ROP, NEC, HAI and neurological symptoms), did not significantly differ between severely hypoglycemic and eu glycemic infants.

Conclusions A majority of ELBW infants are not receiving timely nutritional intervention within the golden hour with a potential for increased risk of morbidity.

561 SURVIVAL NOT CORRELATED TO RESIDUAL BOWEL LENGTH IN NEONATAL SHORT BOWEL SYNDROME

<table>
<thead>
<tr>
<th>1RFatemizadeh*, 2LGollins, 1J Hagan, 1ABHair, 1MHPremkumar. 1Baylor College of Medicine, Houston, TX; 2Texas Children’s Hospital, Houston, TX</th>
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<tbody>
<tr>
<td><strong>Purpose of Study</strong></td>
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<tr>
<td><strong>Methods Used</strong></td>
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<tr>
<td><strong>Summary of Results</strong></td>
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<tr>
<td><strong>Conclusions</strong></td>
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<tr>
<th><strong>Abstract 561 Table 1</strong></th>
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<tbody>
<tr>
<td><strong>Patient Characteristics (n=95)</strong></td>
</tr>
<tr>
<td><strong>GA (weeks)</strong></td>
</tr>
<tr>
<td><strong>BW(g)</strong></td>
</tr>
<tr>
<td><strong>Male (%)</strong></td>
</tr>
<tr>
<td><strong>Inborn (%)</strong></td>
</tr>
<tr>
<td><strong>Age at last follow-up (months)</strong></td>
</tr>
<tr>
<td><strong>SBS Diagnosis (%)</strong></td>
</tr>
<tr>
<td><strong>Atresia</strong></td>
</tr>
<tr>
<td><strong>Volvulus</strong></td>
</tr>
<tr>
<td><strong>Gastroscisis</strong></td>
</tr>
<tr>
<td><strong>Other</strong></td>
</tr>
<tr>
<td><strong>Hirschspring</strong></td>
</tr>
<tr>
<td><strong>Residual bowel length documented (n, %)</strong></td>
</tr>
<tr>
<td><strong>Residual Bowel Length (cm) [n=48]</strong></td>
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<tr>
<td><strong>Present ICV (n, %)</strong></td>
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<tr>
<td><strong>Highest CB</strong></td>
</tr>
<tr>
<td><strong>IFALD (n, %)</strong></td>
</tr>
<tr>
<td><strong>If IFALD, Resolution with FOLE (n, %)</strong></td>
</tr>
<tr>
<td><strong>Average # of surgeries per patient (#)</strong></td>
</tr>
<tr>
<td><strong>Intestinal lengthening (#)</strong></td>
</tr>
<tr>
<td><strong>Evaluated for intestinal transplant (#)</strong></td>
</tr>
<tr>
<td><strong>Intestinal transplant (#)</strong></td>
</tr>
<tr>
<td><strong>Use of Teduglutide (#)</strong></td>
</tr>
<tr>
<td><strong>Average # blood stream infections per patient (#)</strong></td>
</tr>
<tr>
<td>1: Mean (Standard Deviation) 2: Median (Interquartile Range) 3: Patients could have multiple diagnoses</td>
</tr>
</tbody>
</table>
further benefit was observed following the implementation of infant driven feeding or practitioner driven feeding.

**563**

**CORRELATION OF MATERNAL URINE DRUG SCREEN AT DELIVERY AND UMBILICAL CORD TESTING WITH DIAGNOSIS AND SEVERITY OF NEONATAL OPIOID WITHDRAWAL SYNDROME**

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10.1136/jim-2021-SRMC.563

**Purpose of Study**
This study evaluated the use of universal maternal urine drug screen (UDS) at delivery and targeted umbilical cord testing for determining risk of Neonatal Opioid Withdrawal Syndrome (NOWS) diagnosis and severity.

**Methods**
An IRB approved database of de-identified medical records of 770 mother-infant dyads who delivered between 2011 - 2016 at 6 hospitals in a rural Appalachian area was used. McNemar’s exact test was performed to determine the level of agreement between maternal UDS and umbilical cord testing on paired samples. Correlations for a positive drug test, NOWS diagnosis, and NOWS severity (based on if morphine was required for NOWS treatment and newborn length of stay) were also determined.

**Summary of Results**
Included in the database were 572 dyads with a maternal UDS performed at delivery, 433 with umbilical cord testing, and 273 with both types of testing. McNemar’s test revealed a significant difference in the proportion of opioid-positive samples based on maternal UDS and umbilical cord testing indicating a low level of agreement between these two matrices (table 1). Detection of opioids using both maternal UDS and umbilical cord testing on the
same dyad yielded the strongest correlation with NOWS diagnosis. However, detection of opioids in umbilical cord alone showed the strongest correlation with severity of NOWS (table 2).

Conclusions These results suggest that maternal UDS alone may not be adequate as a universal screening tool for diagnosing NOWS and determining NOWS severity, while umbilical cord testing remains a possibly more efficacious method of drug testing.

### Abstract 563 Table 2

<table>
<thead>
<tr>
<th>Testing performed on dyad</th>
<th>N</th>
<th>Phi, ϕ</th>
<th>Phi, ϕ</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal UDS only</td>
<td>572</td>
<td>0.311</td>
<td>0.109</td>
<td>0.149</td>
</tr>
<tr>
<td>Umbilical cord only</td>
<td>433</td>
<td>0.337</td>
<td>0.200</td>
<td>0.210</td>
</tr>
<tr>
<td>Maternal UDS and umbilical cord</td>
<td>273</td>
<td>0.396</td>
<td>0.077</td>
<td>0.143</td>
</tr>
</tbody>
</table>

### Abstract 564

#### Purpose of Study
To determine the association between declines in weight-for-age z scores during the first month after birth and linear growth at term-equivalent age in extremely preterm infants.

#### Methods Used
For this study, anthropometric data of extremely preterm infants was collected prospectively. Weight, length, and head circumference z scores were determined with the 2013 Fenton growth curves. Longitudinal data on declines in weight-for-age z scores from birth to 36 weeks PMA were compared between two independent groups according to the presence or absence of poor linear growth at term-equivalent age, defined as a decline in length-for-age z score from birth to 36 weeks PMA below -2.0 (one of the recently proposed criteria to define severe malnutrition in preterm infants). The repeated-measures analysis was adjusted for birthweight, gestational age, sex, and race.

#### Summary of Results
We evaluated the declines in weight-for-age z scores during the first month after birth in 254 infants. The mean birthweight was 829 ± 228 g and the median gestational age was 26 weeks (IQR: 25 – 28). The mean weight-for-age z score was -0.2 ± 0.9 at birth, -1.1 ± 0.7 at 14 days, and -1.3 ± 0.6 at 28 days. In the adjusted analysis, there were no significant differences in weight-for-age z scores between groups during the first 28 days after birth (figure 1).

Persistent declines in weight-for-age z scores after postnatal day 28 were associated with poor linear growth at term-equivalent age.

#### Conclusions
Declines in weight-for-age z scores during the first month after birth are not associated with a higher risk of poor linear growth at term-equivalent age.

### 565 PDA CLOSURE AND ACETAMINOPHEN: A RETROSPECTIVE STUDY OF SAFETY AND EFFICACY

**Purpose of Study**
Pre-mature infants with delayed closure of patent ductus arteriosus (PDA) can have significant short and long term complications.

**Objective**
This study seeks to identify Acetaminophen as an alternative first line medication for the closure of patent ductus arteriosus.

**Methods Used**
Methods: A retrospective study of infants at a single center NICU that were treated with acetaminophen for PDA closure. Subjects were divided into 2 comparison groups of those who were treated with Acetaminophen as a 1st line treatment and those who used Acetaminophen as a non-1st line treatment. PDA response was considered by ductal size at onset of Acetaminophen dosing and ductal size at the end of Acetaminophen course. Averages and percentages of closure were compared between the 2 groups on the basis of gestational age, weight, PDA response, Liver enzyme values, and max amount of fluid given a day for the first 10 days of life.

**Summary of Results**
Results: Ninety-eight infants were identified with an overall PDA closure rate with Acetaminophen being 49% in both groups. In our first line group, 59.5% had PDA closure compared to 42.6 in our non-first line group. The percentage of PDA’s that showed reduction in size was 24.3% in our first line compared to 32.8 in our non-first line group.

**Conclusions**
A majority of patients in our study responded to Acetaminophen as a treatment for PDA closure. Acetaminophen as a first line agent may be a feasible option for neonates in need of PDA closure.
EVALUATION OF INTESTINAL MICROBIOTA FOLLOWING TRANSITION FROM AN EXCLUSIVE HUMAN MILK-BASED DIET TO BOVINE MILK-BASED FORTIFIER OR PRETERM FORMULA

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**Purpose of Study** To compare the intestinal microbiota before and after transition from an exclusive human milk (EHM) based diet to a bovine milk-based diet in very low birthweight (VLBW) infants at 34 weeks postmenstrual age (PMA).

**Methods Used** VLBW infants were enrolled after parental informed consent. Infants were categorized into two cohorts: fed > 50% mother’s own milk (MOM cohort) or fed > 50% donor human milk (DHM cohort). Feeds were fortified at 60 mL/kg/day and continued until 34 weeks PMA when infants transitioned to bovine human milk-based fortifier (MOM) or to preterm formula (DHM). Stool samples were collected for six weeks and 16S RNA sequencing was performed. The intestinal microbiota was compared between MOM vs. DHM cohorts before and after transition to bovine-based fortifier or preterm formula. Shannon diversity index (SDI), operational taxonomic units (OTUs), and relative abundance of individual bacteria were measured.

**Summary of Results** 31 infants were included with a median gestational age of 29 weeks ± 0.85 and birth weight 1268 grams ± 145.7. 21 infants were MOM group vs. 10 infants were DHM group. All infants transitioned off an EHM at a mean PMA of 35 ± 0.71 weeks. There were no significant differences found in the change in SDI (before or after transition) in the DHM (p=0.459) or MOM group (p=0.594). The change in OTUs was not statistically significant in the DHM group (p=0.704) or the MOM group (p=0.151). The relative abundance of individual bacteria was compared, there was a significant higher abundance of Fusobacteria in the DHM cohort prior to transition off an EHM (p=0.009). No infants received antibiotics > 48 hours of life. There were no cases of NEC.

**Conclusions** The intestinal microbiota undergoes dynamic changes over the first weeks of life. We have previously shown that MOM fed infants have increased diversity of intestinal microbiota compared to DHM fed infants. When comparing intestinal microbiota before and after introduction of bovine milk-based fortifier or preterm formula, there were no significant changes in diversity or relative bacterial abundance. More studies are needed to analyze if longer exposure to bovine-based products has an impact on microbiota diversity.

DOSE RESPONSE STUDY OF CANNABINOID RECEPTOR AGONISTS ON PLACENTAL CYTOKINE DESENSITIZATION

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10.1136/jim-2021-SRMC.567

**Purpose of Study** Maternal marijuana use is increasing despite known effects on the fetus. Tetrahydrocannabinol (THC), a component of marijuana, is thought to manipulate the endocannabinoid system, which has a role in multiple reproductive events. However, the specific molecular effects on the placenta are not well understood. We hypothesize that placenta exposed to THC analog WIN55, 212–2 (win55) will have an upregulation of inflammatory cytokines and oxidative stress. This pilot study’s goal is to assess the dose-response of Win55 on placental tissue integrity and cytokine response.

**Methods Used** With IRB approval, placentas were collected from mothers without any inflammatory or chronic conditions who were undergoing routine c-sections. Punch biopsies were exposed to varying doses of WIN55 (0, 5, 25, 100 mm), cultured in growth medium for 24 hours and then homogenized to obtain total protein lysate. Cytokine profiling was assayed by multiplex bead array and oxidative stress will be evaluated by ELISA. Morphology in fixed placental biopsies will be analyzed by tissue histology.

**Summary of Results** So far, 2 placentas have been analyzed for cytokine expression for trends but not for statistics. IL-6, IL-1b and IL-8 were all increased in placenta, but no changes were seen for IL-10, IL-4, IL-2, IL-5 or TNF-a. Placental morphology and measures of oxidative stress are pending at this time.

**Conclusions** Levels of IL-6, IL-1b and IL-8 seem to increase in a dose dependent manner in the placenta after WIN55 exposure. Tissue collection and processing is ongoing. After dosing experiment, exposed placental tissues will undergo further analysis with RNA sequencing.

EVALUATING ASSOCIATIONS OF IN UTERO NICOTINE EXPOSURE AND HYPOGLYCEMIA AFTER DELIVERY

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10.1136/jim-2021-SRMC.568

**Purpose of Study** Hypoglycemia in neonates contributes to 4.0–5.8% of neonatal intensive care unit admissions. In utero nicotine exposure is underexplored as a potential contributor to neonatal hypoglycemia after birth. Rat models have shown that in utero nicotine exposure can be associated with glucose dysregulation. Our primary aim was to evaluate in utero nicotine exposure as a risk factor for developing hypoglycemia in a sample of exposed neonates. We hypothesized that neonates exposed to nicotine in utero were more likely to be hypoglycemic (blood glucose < 45 mg/dl) compared to non exposed neonates.
Methods Used We augmented an existing dataset of neonates with household based in utero nicotine exposure that were admitted to a large, level IV NICU by selecting controls whose parents denied household smoking, were born within a 6-month timeframe and were within a birthweight of 50 grams of a nicotine exposed neonate. A retrospective chart review was used to abstract gestational age, growth parameters, maternal history of diabetes, and glucose levels in the first three hours of life.

Summary of Results Sixty infants were excluded from the analyses due to missing chart information, and 660 were included in the analysis. Bayesian generalized linear modeling evaluated hypoglycemia in the first three hours of life as a function of neonates’ home environment (smoking, non-smoking). In utero nicotine exposure demonstrated a 94.3% posterior probability for greater hypoglycemia risk (RR=1.185, 95% CrI = [0.953, 1.445]). A 94.6% posterior probability was demonstrated when small for gestational age, intrauterine growth restricted neonates, and neonates of diabetic mothers were excluded (RR=1.271, 95% CrI= [0.946, 1.669]).

Conclusions Nicotine exposure in utero was found to be a possible risk factor for developing hypoglycemia after birth. Mechanisms of action should be explored and additional research on in utero nicotine exposure risks should follow.

569 MATERNAL HYPERTENSION TYPE AND ITS AFFECT ON THE NEONATAL PLATELET COUNT

Methods Used Lab values were reviewed from infants born to preeclamptic mothers over a 19-month period. These infants constituted the hypertension (HTN) group and were matched 1:1 with neonates of a similar gestational age born to normotensive mothers. Infants in the HTN group were subcategorized based on the mother’s hypertension type: non-severe preeclampsia (NS); severe preeclampsia diagnosed by blood pressure only (BP); severe preeclampsia with signs of maternal end-organ dysfunction (EOD); and severe preeclampsia with an affected fetus (birthweight <10% for age) (AF). Lab values were compared between the larger HTN group and the control group as well as within HTN subgroups.

Summary of Results There were 182 infants in the HTN group and 179 infants in the control group. The HTN group had a significantly lower first platelet count compared to the control group (208k vs 237k, p-value <0.001). Within the HTN group, the AF subgroup had a statistically significantly lower initial platelet count compared to the NS and BP subgroups. Regression modeling showed that the initial platelet count was lower in the HTN group compared to the control group. In subgroup analysis, both AF and BP had lower initial platelet counts compared to controls. The probability of having a platelet count <150k was not significantly different between the HTN and control groups or between HTN subgroups; however, a lower birth weight was associated with a greater probability of an initial platelet count <150k.

Conclusions Our results suggest that infants born to preeclamptic mothers are at increased risk of a lower platelet count and that infants who weigh <10% for age born to preeclamptic mothers seem to be at even greater risk. This lower platelet count may be mediated through low birth weight itself, however, and not preeclampsia.

570 PERINATAL INTRACRANIAL HEMORRHAGE IN A PATIENT BORN WITHOUT THE USE OF INSTRUMENTATION: A RARE INITIAL PRESENTATION OF HEMOPHILIA A

Case Report Hemophilia A is an inherited bleeding disorder caused by a deficiency of factor VIII (FVIII) of the clotting cascade. Patients with hemophilia are at increased risk of perinatal intracranial hemorrhage (ICH) compared to the general population, although the incidence is estimated to be <5%. It is rare for perinatal ICH to occur in absence of prolonged or instrumented delivery. Here we present the case of a newborn with perinatal ICH born via uncomplicated vaginal delivery without the use of instrumentation who was later found to have severe hemophilia A.

Case presentation The patient is a term male infant born to a 31-year-old mother via vaginal delivery without the use of forceps or vacuum extraction. The mother’s pregnancy was uncomplicated. She received routine prenatal care and prenatal labs were negative. Membranes ruptured 2 hours prior to delivery and resuscitation was routine. Apgar scores were 8 and 9. The infant was triaged to the nursery. At 22 hours of life, the patient developed apnea and respiratory distress. He was transferred to the NICU where he was noted to have short episodes of facial twitching and left upper extremity stiffening concerning for seizures. CXR, CBC, CMP, blood culture, blood HSV PCR, and toxicology screens were obtained and negative.

A CT of the head without contrast showed extensive ICH in the posterior fossa with regional mass effect. Angiography was obtained revealing patent intracranial vasculature without malformations. The patient underwent a suboccipital craniectomy and hemorrhage evacuation with duraplasty on day of life 2. A bleeding diathesis workup revealed a prolonged PTT and low FVIII activity, confirming the diagnosis of hemophilia A. The patient received 12 days of FVIII replacement and was discharged home on day of life 15 without major neurologic deficits.

Discussion This case highlights why medical providers should be open to the possibility of the diagnosis of bleeding disorders in newborns with ICH even in the absence of pertinent family history or difficult or instrumented delivery.
Purpose of Study
Obesity negatively impacts lung function in children and adolescents. Weight for length (W/L) is a useful marker of obesity in premature infants. To study if higher W/L in preterm infants with bronchopulmonary dysplasia (BPD) correlated with higher Respiratory Severity Scores (RSS).

Methods Used
Supported by NIH (Award # 1U54GM115428). Preterm infants born @ <30 weeks requiring oxygen @ 30–33 weeks for >2 days were enrolled. Weight, length, and head circumference were measured weekly by the research nurse. Data on mean calories & protein, W/L z-scores & BMI was collected. RSS was calculated as per the STOP-ROP trial. Data were analyzed using descriptive and inferential statistics. Linear mixed model regression was used to study the relationship between the continuous variables with potential covariates. A p-value <0.05 was considered significant.

Summary of Results
We enrolled 58 preterm infants. Maternal and neonatal demographics shown in figure 1. For every unit increase in Wt/L Z score, RSS increased by 0.06 (p <0.0001). RSS was significantly higher in grade 3 BPD- 1.0 vs 0.2 in grade 1 BPD (p <0.001). RSS significantly correlated with WT/L and BMI even after including postnatal steroids, gestational age, and sex in the regression model.

Conclusions
Our study is the first to demonstrate that higher BMI and WT/L may adversely affect respiratory severity in BPD infants. Hence, attention should be paid to avoid preterm obesity in infants with BPD.

Purpose of Study
The purpose of this study was to determine if SMOFlipid (SMOF) reduces the incidence of intestinal failure-associated liver disease (IFALD) compared to Intralipid (IL). Secondary outcomes included achievement of enteral autonomy (EA), time to achieve EA and growth parameters.

Methods Used
Patients admitted between January 2013 and June 2019 diagnosed with intestinal failure (IF) were studied. IF was defined as a significant bowel resection, gastrointestinal motility disorder, or congenital enterocyte disorder diagnosed at <1 year old and requiring parenteral nutrition (PN) for ≥ 60 of 74 consecutive days. One year of follow-up was required to capture IFALD resolution and achievement of EA. Clinical characteristics, IFALD incidence (direct bilirubin > 2 mg/dL for > 2 weeks), resolution of IFALD (direct bilirubin remained ≤ 2 mg/dL), achievement of EA (discontinuation of PN for > 3 months), time to achieve EA, growth and nutritional parameters were compared between the SMOF and IL cohorts. Patients who initiated on IL and switched to SMOF were included in the SMOF cohort.

Summary of Results
There were 34 SMOF and 45 IL patients. The median gestational age was 30 3/7 weeks for SMOF and 30 0/7 weeks for IL patients. The median birth weight was 1265 grams for SMOF and 1170 grams for IL patients. IFALD incidence was 74% in SMOF and 82% in IL patients. Of the patients that developed IFALD, 92% of SMOF and 86% of IL patients achieved resolution of IFALD within one year of IF diagnosis. Achievement of EA within one year of IF diagnosis was observed in 59% of SMOF and 82% in IL patients. Of the patients that developed IFALD, 92% of SMOF and 86% of IL patients achieved resolution of IFALD within one year of IF diagnosis. Achievement of EA within one year of IF diagnosis was observed in 59% of SMOF and 62% of IL patients. The median time to achieve EA was 108 and 130 days in SMOF and IL patients. At peak direct bilirubin level, the median z-score for height was lower in the SMOF group, but z-score for weight was higher in the SMOF group. Median z-scores for height and weight were lower in SMOF patients at discharge and at IFALD resolution.

Conclusions
SMOF may be beneficial in reducing the incidence of IFALD and increasing resolution of IFALD in pediatric IF patients, while also decreasing the time to achievement of EA. Nutritional parameters between the two fat emulsions require further investigation. SMOF may be a practical alternative in PN support for growth and to reduce the development of progressive liver disease.

Abstract 571 Figure 1
Purpose of Study Despite advances in neonatal care and nutrition, postnatal growth failure affects up to 50% of VLBW infants. The goal of this study is to investigate if extrauterine growth failure (EUGF) improved after implementation of a multidisciplinary nutrition team in AGA infant and if caloric intake and milk type was different between those infants who became SGA and those who remained AGA.

Methods Used A retrospective review of infants with BW <1800 g who were born AGA between 2014–2019 was conducted. We compared AGA vs EUGF at 36 weeks post-menstrual age (PMA). We excluded infants who died or were discharged prior 36 weeks, transferred in at >2 days of life, and those with a diagnosis of NEC. We used SPSS to analyze our data.

Summary of Results A total of 505 infants were included. 291 infants who were AGA with a mean BW of 1191 ± 332 became SGA at 36 weeks and 178 infants remained AGA with a mean BW of 1362 ± 302, p< 0.001 between groups. The incidence of EUGF decreased from 77% prior to multidisciplinary nutrition team implementation in 2016 to 54%. We found that infants who remained AGA at 36 weeks CGA received higher kcal/kg/day at days 7, 14, 21 and 28 with a significant difference at day 21 (123 kcal/kg/day AGA vs 113 kcal/kg/day EUGF, p<0.001). There was no difference in type of calories (enteral vs TPN). After adjusting for gender, GA, BW percentile, antenatal steroids, late onset sepsis, BPD and PDA treatment a higher caloric intake at 21 days of life remained a significant predictor of AGA at discharge (OR 1.027, CI 1.005–1.049, p=0.014). The proportion of infants born at >50% BW percentile was higher in the AGA group (p<0.05). Infants who received >50% of their feedings from maternal breast milk (MEBM) were less likely to become SGA at discharge even after adjusting for caloric intake (OR 4.369 CI 1.585–12.039 p=0.004).

Conclusions With the implementation of a multidisciplinary nutritional team the incidence of EUGF decreased in preterm infants born AGA at <1800 grams. The incidence of EUGF can be further reduced by maximizing caloric intake by 21 days of life and by increasing MEBM, particularly for infants born in the lower percentiles.

Abstract 574 Figure 1 Bar charts of BP, urine aldosterone and sodium levels in mild/no BPD vs severe BPD

Conclusions Our study showed that hypertension in PI with severe BPD is associated with hyperaldosteronism and decreased urine sodium levels. Further studies are needed to confirm the association and establish causation.
Abstracts

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PREVALENCE OF ACUTE KIDNEY AND HEPATIC INJURY IN INFANTS WITH HYPOXIC-ISCHEMIC ENCEPHALOPATHY AND ASSOCIATION WITH ADVERSE SHORT-TERM OUTCOMES

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Purpose of Study To characterize kidney and hepatic injury among infants with hypoxic-ischemic encephalopathy (HIE)

Methods Used This retrospective cohort study occurred at two level III NICUs from 2011–2019. Infants were eligible for inclusion if they were born at > 36 weeks with birth weight > 1800 grams, had a diagnosis of moderate to severe HIE, and completed therapeutic hypothermia. Patients were classified as having no acute kidney or hepatic injury, acute kidney injury (AKI) only, acute hepatic injury (AHI) only, or both acute kidney and hepatic injury. The Acute Kidney Injury Network guidelines were utilized to define AKI. A serum alanine aminotransferase level greater than twice the upper limit of the currently accepted range for term neonates was utilized to define AHI.

Summary of Results Of the 182 patients who met criteria for inclusion in this study, 100 patients had no AKI or AHI, 13 patients had AKI only, 41 patients had AHI only, and 28 patients had both AKI and AHI. Patients with both acute kidney and hepatic injury had serum creatinine values that peaked at higher concentrations and persisted longer than those in other groups (peak of 1.62mg/dL on day of life 3, compared to 0.75 mg/dL on day of life 1 in those with no AKI or AHI), but ultimately converged to similar normal levels. The mortality rate in patients with both AKI and AHI was over six times higher than those without AKI or AHI (46% compared to 7%). Patients with both AKI and AHI were least likely to discharge home on full PO feeds (53% of AKI only, 41% of AHI only, and 28% of those with both AKI and AHI). Patients with both acute kidney and hepatic injury had serum creatinine values that peaked at higher concentrations and persisted longer than those in other groups (peak of 1.62mg/dL on day of life 3, compared to 0.75 mg/dL on day of life 1 in those with no AKI or AHI), but ultimately converged to similar normal levels. The mortality rate in patients with both AKI and AHI was over six times higher than those without AKI or AHI (46% compared to 7%). Patients with both AKI and AHI were least likely to discharge home on full PO feeds (53% of AKI only, 41% of AHI only, and 28% of those with both AKI and AHI). Patients with both AKI and AHI were least likely to discharge home on full PO feeds (53% of AKI only, 41% of AHI only, and 28% of those with both AKI and AHI).

Conclusions Patients with moderate to severe HIE undergoing therapeutic hypothermia who have both renal and hepatic dysfunction have abnormal serum creatinine levels that peak higher and persist longer, but ultimately normalize. However, these patients are at higher risk for adverse short-term outcomes and mortality compared to those patients without multi-organ system dysfunction.

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PATENT DUCTUS ARTERIOSUS INDOMETHACIN PROPHYLAXIS IN EXTREMELY LOW BIRTH WEIGHT INFANTS IS NOT ASSOCIATED WITH NEONATAL ACUTE KIDNEY INJURY

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Purpose of Study Prophylactic indomethacin (ppx) for patent ductus arteriosus (PDA) management may be associated with acute kidney injury (AKI) when a modern diagnostic strategy is applied. We aimed to determine if ppx alters AKI incidence or subsequent need for PDA treatment in ELBW infants.


Summary of Results Of 137 infants, 77 met inclusion criteria (C1: n=34; C2: n=43). The incidence and severity of AKI did not differ between cohorts, however, fewer infants required subsequent PDA treatment in C2 (C1: 19/34, C2: 13/43; p=0.02) (table 1). Those who developed AKI had lower gestational age and more nephrotoxin exposure (table 2).

Conclusions In interim analysis ppx was associated with decreased need for subsequent PDA treatment in ELBW infants. Despite its potential nephrotoxicity, we did not
demonstrate an increased risk of AKI in the first postnatal week in those who received ppx. Further research utilizing novel AKI biomarkers is ongoing.

577 PROVIDER PROGNOSTIC DISCORDANCE AND RESUSCITATION THRESHOLDS FOR INFANTS AT 22 WEEKS’ GESTATION

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10.1136/jim-2021-SRMC.577

Purpose of Study To quantify prognostic discordance (PD) of survival estimates at 22 weeks’ gestation and evaluate if PD is associated with survival thresholds above which providers recommend active treatment.

Methods Used We administered a case-based survey at 2 Atlanta hospitals to obtain provider survival estimates and thresholds for active treatment. We used the updated NICHD Extremely Preterm Birth Outcomes Tool for data-driven estimates. PD was calculated as provider minus data-driven survival estimate and classified as pessimistic (provider estimate below lower hospital range of data-driven estimate), accurate (within range), or optimistic (above range).

Summary of Results Of 137 respondents (50% response rate), there were 85 nurses, 24 nurse practitioners, 7 fellows, and 21 attendings. No association was detected between PD and provider type (P=0.11), age (P=0.94), or years of experience (P=0.41). The median survival threshold above which providers recommended active treatment was 30% (IQR 20–45%). PD, by group or calculated value, was not associated with survival thresholds above which active treatment was recommended (figure 1).

Conclusions While prognostic discordance exists in neonatal providers, it is not associated with survival thresholds above which providers recommend active treatment. Our data suggest factors other than prognosis may influence when providers recommend resuscitation at 22 weeks’ gestation.

578 BREECH PRESENTATION AND DEVELOPMENTAL DYSPLASIA OF HIP IN PRETERM INFANTS: A RETROSPECTIVE REVIEW

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10.1136/jim-2021-SRMC.578

Purpose of Study Breech presentation is a risk factor for developmental dysplasia of the hip (DDH). Therefore, the American Academy of Pediatrics recommends imaging infants with breech presentation born in the third trimester for surveillance purposes. Many hospitals screen for DDH in preterm infants born before the third trimester of pregnancy. Our objective was to compare the incidence of DDH among infants born extremely preterm (23–28 weeks GA) with infants born preterm (28–36 weeks GA) and term (> 37 weeks GA).

Methods Used We reviewed the charts of infants born in breech presentation between January 1st, 2009, and December 31st, 2018, who had a hip ultrasound performed in the first year of life. We extracted gestational age, birth weight, gender, and hip ultrasound findings.

We defined DDH as:
1. Immature acetabulum when age at the time of ultrasound is > 3 months
2. Graf 2b or above grades on ultrasound.
3. Subluxation or dislocation of hip joints.

We used Stata for Data analysis.

Summary of Results A total of 351 infants (222 females and 129 males) were included in the analysis; 21 were diagnosed with DDH (18 females and three males). The incidence of DDH was comparable in three groups. On logistic regression, the gestational age at birth was not associated with risk of DDH.

Limitations: This is an ongoing study with small sample size. We plan to present the full data at the time of the conference.

Conclusions Gestational age at birth was not associated with risk of DDH for infants with breech presentation. Infants with breech presentation should be considered for hip ultrasound regardless of gestational age.

<table>
<thead>
<tr>
<th>Abstract 578 Table 1 Characteristics of infants and their outcomes</th>
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<tr>
<td>23–28 weeks (n = 20)</td>
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<tr>
<td>Birth weight* (grams)</td>
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<tr>
<td>Gestational age* (weeks)</td>
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<tr>
<td>Female (n, %)</td>
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<td>DDH (n, %)</td>
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*data expressed as a mean and standard deviation

Abstract 578 Figure 1
EVALUATING SATISFACTION WITH TELEMEDICINE USE FOR NEONATOLOGY PRENATAL CONSULTATIONS DURING THE COVID-19 PANDEMIC

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Purpose of Study Virtual visits experienced an exponential increase during the COVID-19 pandemic. However, the delivery of sensitive healthcare information through telemedicine in the case of prenatal consultations between neonatologists and pregnant women with a known fetal anomaly is understudied. The objective of this study is to evaluate patients’ and physicians’ satisfaction with the use of telemedicine and to compare satisfaction levels of patients using telemedicine with those receiving traditional in-person consultations.

Methods Used This cross-sectional study evaluates patients’ and physicians’ satisfaction with the use of telemedicine for prenatal consultations provided via Zoom Pro™. Participants were pregnant women with known fetal anomalies and neonatologists delivering prenatal consultation who voluntarily agreed to answer an anonymous survey. Both rated satisfaction with Likert items addressing perceived quality of care, patient/physician communication and technologic aspects of the video-call. Also, we assessed satisfaction in a convenience sample of patients receiving traditional prenatal consultations. Item frequencies and means for categories of items were computed by group (video patients, in-person patients, physicians). Welch’s t for unequal sample sizes compared patient groups on communication quality.

Summary of Results Overall consultation quality was rated as good or excellent by 30 (96.7%) of 31 video-consult patients and all in-person patients. Patient group means computed on six 5-point Likert items about patient-doctor communication did not differ significantly (video consult: M=4.79±0.4; in-person consult: M=4.78±0.3; p=.94). Seven physicians who provided video consults rated their effectiveness on 5-point Likert items, with a high mean across 10 items (M=4.63±0.35).

Conclusions Patients and neonatologists were very satisfied with virtual prenatal consultations. Telemedicine offers an effective alternative to conduct prenatal visits for pregnant women with fetal anomalies during the COVID 19 pandemic.

PATENT DUCTUS ARTERIOSUS RESPONSE BY TREATMENT COURSE: THE IMPACT OF PRENATAL AND CLINICAL FACTORS ON CLOSURE RATES

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Purpose of Study Patent ductus arteriosus (PDA) response to treatment (tx) is unpredictable. We aimed to examine PDA response by tx course and determine how postmenstrual age (PMA), chronological age (CA), gestational age (GA), antenatal steroid exposure (ANS), birth weight (BW) and weight at tx (WT) affect PDA closure rates.

Methods Used Retrospective cohort of preterm infants born 1/16/16–12/31/18 treated with acetaminophen and/or indomethacin for PDA. Cox regression models were used to determine if factors of interest impact time to PDA closure.

Summary of Results We evaluated 289 tx courses administered to 132 infants (table 1). Ultimately, 113 (86%) infants achieved PDA closure: 31 (23%) during tx, 29 (22%) via ligation, and 53 (40%) delayed closure; however, 94 (71%) had evidence of PDA constriction following tx.

When examining time to PDA closure, PMA, CA, GA, ANS, BW, and WT were not associated (table 2). Time to PDA closure was independent of PMA, CA, GA, ANS, BW, and WT suggesting other factors may influence the success of pharmacologic intervention.

CHARACTERISTICS OF INFANTS READMITTED FOR HYPERBILIRUBINEMIA AFTER DISCHARGE FROM LEVEL 1 NURSERY

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Purpose of Study Hyperbilirubinemia is a significant problem in neonates. Readmission rates for hyperbilirubinemia have continued to rise despite advancements in screening for...
common risk factors such as ABO incompatibility and infection. Though regular bilirubin screenings per AAP guidelines are withstanding in newborn nurseries throughout the United States, term newborns continue to return to the hospital with bilirubin levels within the ‘high risk’ range on the bilirubin nomogram. We sought to identify characteristics of infants readmitted within their first two weeks of life to our hospital in order to better understand any modifiable risk factors and future preventative measures.

Methods Used We reviewed all babies >37 wk EGA admitted to Le Bonheur Children’s Hospital in the first two weeks of life with a primary diagnosis of hyperbilirubinemia. Infants transferred from other hospitals or with other primary diagnoses were excluded (i.e. tetralogy of Fallot or congenital hypothyroidism). Patient charts from Jan 2019 to July 2020 were reviewed. Data collected included patient demographics, admission bilirubin levels, relevant laboratory data, length of hospital stay, and interventions required during hospitalization.

Summary of Results 90 babies were identified, who were readmitted to the hospital after initial discharge from level 1 nursery at other institutions. Average maternal age was 28 years, and 59% (53/90) of mothers were less than 30 years of age. Of the babies, 49% (44/90) were Caucasian and 66% (59/90) were males. Average age of admission was 4.8 days and level of admission serum bilirubin was about 19 mg/dl. 46% (41/90) mothers had blood type O positive with only 3 Infants with positive Coombs test. Most importantly 69% (62/90) were exclusively breast fed. All babies needed phototherapy and average stay was 1.5 days. Out of all babies identified, none had a secondary infection.

Conclusions Significant number of babies continue to be readmitted to our children’s hospital for hyperbilirubinemia. Majority of admissions seem to be breastfeeding related. Through our chart review, several mothers reported a delay in breast milk production/let down, and ultimately struggled with breastfeeding. Proper monitoring and education of breastfeeding mothers could reduce hospital readmissions.

582 PRE-EXTUBATION CAFFEINE TIMING AND EXTUBATION SUCCESS IN VERY LOW BIRTH WEIGHT INFANTS
A Salem*, R Dryer, V Saroha, RM Patel. Emory University and Children’s Healthcare of Atlanta, Atlanta, GA
10.1136/jim-2021-SRMC.582

Purpose of Study To evaluate if administering caffeine more proximal to extubation improves extubation success.

Methods Used We conducted a retrospective, observational study of very low birth weight infants at a single level III unit born over a 10-year period. The association between the timing of caffeine administration prior to extubation and extubation success was evaluated using multivariable logistic regression. We specified timing of caffeine using tertiles and adjusted for confounding using an extubation success probability derived from extubation.net (model 1). Sensitivity analyses incorporated an expanded model that included the following variables: gestational age, weight at extubation, pre-extubation pH, respiratory severity score in the first 6 hours of life, FiO₂ prior to extubation, planned vs. unplanned extubation, and caffeine dose (model 2).

Summary of Results We evaluated 208 infants with a mean gestational age of 26.9 ± 2.1 weeks. Extubation success among the three caffeine groups was 67%, 65% and 71% in the 1st, 2nd and 3rd tertiles, respectively. There was no significant difference in the odds of extubation success among the three caffeine tertiles (figure 1).

Conclusions Our study does not support optimizing the use of caffeine within several hours of a planned extubation to improve extubation success.

583 IMPROVED OUTCOMES WITH EXPEDITED TROPHIC FEEDINGS IN EXTREMELY LOW BIRTH WEIGHT PRETERM INFANTS
E Schultz*, V Bray, M Kreusel, A Kumar, S Ford. University of South Florida, Tampa, FL
10.1136/jim-2021-SRMC.583

Purpose of Study There is no widely accepted consensus on the optimal timing and duration of trophic enteral feeding in extremely low birth weight (ELBW) infants. We hypothesized that shortened duration of trophic feeding would be associated with decreased days on TPN and decreased central line days, among other beneficial outcomes in our ELBW population.

Methods Used We prospectively followed a cohort of infants following a quality improvement initiative that expedited advancement of enteral feeds and matched them to a historical cohort. This initiative shortened the duration of trophic feeding in preterm infants <1000 g. All ELBW neonates were fed either mother’s own or donor breast milk fortified with bovine human milk fortifier. We reviewed data from a year
prior through a year following the protocol change. Babies born <1000 g and admitted directly to our level III NICU at Tampa General Hospital were included. Exclusion criteria included infants unable to initiate feeds within the first 7 days of life. Baseline demographic and short-term outcome data were collected and compared via Mann-Whitney test for continuous and chi-squared/Fisher exact test for categorical variables.

Summary of Results From January 2018 through February 2020, 58 babies born prior to the feeding protocol change and 40 babies born after were included in the study. All baseline demographics were similar among cohorts. Compared to the pre-implementation cohort, ELBW infants receiving expeditied trophic feeds required significantly fewer days of TPN (16.4 vs 11.5, p<0.01), days to final volume enteral feeds (18.5 vs 12.6, p<0.01), central line days (17.1 vs 13.1, p<0.01), incidence of feeding intolerance (63.8% vs 42.5%, p=0.04), and cholestasis (32.8% vs 12.5%, p=0.02). Average weight gain velocity was higher in the post-implementation cohort (13.4 vs 14.6 g/kg/day, p<0.01). There was no difference in the incidence of NEC (13.8% vs. 12.5%, p=0.853) or other adverse outcomes.

Conclusions Shortening the duration of trophic feeding is associated with better weight gain and decreased cholestasis, feeding intolerance and central line utilization, as well as fewer days of TPN and days to full feeds, among ELBW infants <1000 g.

584 G-ROP SCREENING CRITERIA REDUCES THE NUMBER OF PRETERM INFANTS REQUIRING RETINAL EXAMS: INDEPENDENT VALIDATION AT A TERTIARY CARE NEONATAL INTENSIVE CARE UNIT

1R. Sessler*, 1A. Makkar, 1B. Johnson, 3M. Siatkowska, 2F. Bhatti. 1The University of Oklahoma Health Sciences Center, Oklahoma City, OK; 2University of Oklahoma Health Science Center, Oklahoma City, OK

Purpose of Study The Postnatal Growth and Retinopathy of Prematurity (G-ROP) study was developed at The Children’s Hospital of Philadelphia, which revised retinopathy of prematurity (ROP) screening criteria based on postnatal weight gain with 100% sensitivity in capturing treatment-warranted (Type 1) ROP and 30% reduction of infants requiring screening exams. The purpose of our study was to a) independently validate and apply the G-ROP screening criteria to infants at a level IV Neonatal Intensive Care Unit (NICU) who underwent exams based on current AAP/AAPOS criteria, and b) to determine if any cases of Type 1 ROP would have been missed.

Methods Used This was an IRB-approved retrospective analysis of infants between 28–35 weeks’ gestation who received retinal screening exams at The OU Children’s Hospital NICU between Jan 2014-Dec 2019. We retrospectively applied G-ROP criteria to assess validity in capturing Type-1 ROP, preventable ROP examination and related cost savings. Data collected included birthweight, GA, weight at postnatal days 10, 19, 20, 29, and weight at discharge. Outcome data included the presence of ROP as well as any baby who required treatment prior to discharge from the NICU. Children who did not have all data points were excluded from this analysis.

Summary of Results A total of 799 eligible infants were screened, of which 51 (6.38%) developed ROP, 3 of which had Type 1 ROP. All 3 of these infants were captured by the G-ROP criteria. We identified 11 babies who had Type 2 ROP (Zone 2 Stage 1), not requiring treatment, who were not captured by G-ROP criteria. Implementation of G-ROP criteria in our setting would have resulted in cost savings of $70,000 over this 6-year period based on preventable exams.

Conclusions The G-ROP screening criteria for ROP can safely be applied to any retinal screening program at a tertiary care NICU with 100% sensitivity for treatment-warranted ROP. Independent validation allows for reassurance that no baby requiring treatment would be missed and will lead to significant cost savings.

585 ORAL NITRATE SUPPLEMENTATION IN A MURINE BRONCHOPULMONARY DYSPLASIA MODEL

M Silverberg*, A Freeman, K Ricart, SJ Gentile, R Patel. University of Alabama in Birmingham, Birmingham, AL

Purpose of Study Few therapies reduce bronchopulmonary dysplasia (BPD) which remains the most common morbidity of prematurity. Nitrate reductase (NR), an enzyme produced by commensal bacteria on the dorsum of the tongue, bioactivates salivary and dietary nitrate to nitrite, which is further reduced to nitric oxide (NO) thereby influencing NO bioavailability. We previously reported low oral NR activity in extremely low birthweight infants who develop BPD. Mechanistic investigations modulating this enzymatic pathway through nitrate supplementation may support therapeutic utility. We hypothesized that oral nitrate supplementation would reduce histological lung injury and improve pulmonary function compared to age matched controls in a hyperoxic BPD animal model.

Methods Used Neonatal C57BL/6 pups were exposed to normoxia (21% O2) or hyperoxia (85% O2) from P0-P14. Pups were given either sterile water or an oral nitrate solution by gavage on P4, P7, P9 and P13. Treatment groups included: sterile water (control), 1 mM of nitrate, 10 μmoles of nitrate, and 10 μmoles of nitrate. Treatments were administered with an animal feeding syringe in equal amounts to all groups. Pups remained in their initial treatment groups during the study. After 14 days of exposure, lungs were harvested from pups and prepared using H&E stains for examination. Radial alveolar counts (RAC) were completed as a marker for histological lung injury.

Summary of Results Upon initial analysis, there was a trend towards higher RACs in the hyperoxia control group when compared to the nitrate treatment groups. Analysis using one-way Anova showed significantly different RACs between hyperoxia treatment groups. While this data seems to contradict our hypothesis, the n for each group was very low as this was an initial study.

Conclusions Nitrate exposure in a hyperoxic lung model resulted in less death but worse lung injury in survivors. Future modified protocols in which hyperoxia exposed controls survive are needed to further determine whether nitrate supplementation may attenuate lung injury. Additional pulmonary function testing after 14 days of exposure and treatment
A NOVEL MODEL FOR INFLAMMATION INDUCED WHITE MATTER INJURY IN RATS

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10.1136/jim-2021-SRMC.586

Purpose of Study Brain white matter injury (WMI) is a leading cause of neurological disabilities in preterm infants that can affect sensory, motor, and cognitive brain function. WMI ranges from severe, necrotic periventricular leukomalacia (PVL) to mild diffuse WMI that involves changes to oligodendrocyte (OL) lineage cells and neurons. Diffuse WMI has emerged as the most prevalent form in modern neonatology. This has led to calls for relevant animal models that can more accurately mimic diffuse WMI. Previously, we have established a PVL-like model by intracerebral injection of a high dose of lipopolysaccharide (LPS) to neonatal rats. The aim of this study was to test the hypothesis that low-grade neuroinflammation caused by intracerebral injection of a lower dose of LPS may produce clinically relevant diffuse WMI.

Methods Used Sprague Dawley rats on postnatal day 5 (P5) were injected intracerebrally with LPS (100 μg/kg, in saline) or saline. On P7, we investigated injury and dysmaturity of OL lineage cells and neurons, activation of astrocytes and microglia, as well as damage to axons and dendrites, by immunohistochemistry and Western blot. Cells were quantified by stereological cell counting methods.

Summary of Results Our data show that a lower dose of LPS (1/10 of previous model) led to an activation of Iba1+ microglia and GFAP+ astrocytes across brain regions including the periventricular white matter and hippocampus. LPS treatment led to acute axonal damage shown by beaded β-amyloid precursor protein (β-app) positive fibers in the cortex, corpus callosum, and hippocampus; This was rarely observed in the control rats. In addition, reduction of Microtubule Associated Protein 2 (MAP2) staining and Doublecortin (DCX) protein levels in the hippocampus suggests neuronal dysmaturation. LPS resulted in a reduction in Rip+ later stage OLs but not PDGF receptor + OL progenitor cells. There were no apparent necrotic brain damages noted in LPS-treated rats.

Conclusions The results suggest that a lower dose of LPS produces cellular and molecular features of diffuse WMI, characterized by injury and dysmaturation in both OLs and neurons that are increasingly seen as critical cellular substrates underlying cognitive and behavioral deficits in very premature infants.

Pulmonary and critical care medicine

Joint plenary poster session

4:30 PM

Thursday, February 25, 2021

A CASE OF diffuse INTERSTITIAL PNEUMONITIS CAUSED BY NITROFURANTOIN

M Abohelwa*, S Siddiqui, G Elmasry G Del Rio-Pertuz, FM Fernandez, K Nugent. Texas Tech University Health Science Center, Lubbock, TX; University of Leicester, Leicester, UK

10.1136/jim-2021-SRMC.588

Introduction Nitrofurantoin is an antimicrobial agent that is commonly used for treating acute cystitis. Also, it is used as suppressive therapy for recurrent Urinary tract Infections (UTI). Pulmonary toxicity can occur following treatment with nitrofurantoin, which can be acute or chronic.

Case presentation A 66-year-old female patient with a history of recurrent UTIs maintained on nitrofurantoin as a suppressive therapy for five months presented to ED with a cough and acute dyspnea of two days. On presentation, she was in respiratory distress and desaturating to the 70s. Physical Exam...
showed a clear chest. Non-invasive Positive Pressure Ventilation was applied. Laboratory workup showed eosinophilia of 16%, elevated ESR, and CRP. The other lab workup was normal. CT angiography was done to rule pulmonary embolism, and it only showed mild interstitial sepal thickening. Echocardiography showed normal ejection fraction. After ruling out other causes, the diagnosis of diffuse interstitial pneumonitis due to nitrofurantoin was established based on the whole clinical picture of nitrofurantoin intake, increased absolute eosinophilic count, interstitial thickening on chest CT. Nitrofurantoin was stopped immediately, and the patient’s condition improved significantly.

Discussion Acute hypersensitivity pneumonitis may occur following nitrofurantoin therapy and patients usually present with fever, dyspnea, cough, possible rash, sometimes chest pain, and peripheral eosinophilia. Chronic pneumonitis might occur after six months of treatment. The subacute presentation usually occurs between one month to 6 months. Initial lab workup should be directed to rule out other causes. A Normal Echocardiography and low pro-BNP will rule out any cardiac causes. The absence of radiological findings and normal procalcitonin levels will rule out pneumonia. The commonest lab finding in the acute presentation is a CBC showing eosinophilia. Normal levels of ANA, c-ANCA, p-ANCA, and RF will help to rule out rheumatological causes. Treatment usually includes stopping the nitrofurantoin. Steroids can be used in severe cases. No proof is established regarding its use.

**RESIDENT TRANSITIONS OF CARE AND ANTIMICROBIAL USE AMONG PATIENTS IN THE INTENSIVE CARE UNIT**

B Ademi*, T Smith, Y Zu, J Denson. Tulane University School of Medicine, New Orleans, LA

**Purpose of Study** Service transitions of care in the hospital are associated with increased mortality, yet these handoffs in the intensive care unit (ICU) are understudied. We investigated antimicrobial use and resident care transition among fatal cases in the ICU.

**Methods Used** These data were collected as part of the ‘ICU End-of-Rotation Transition of Care Study’ which is a single-center, prospective observational cohort study enrolling adults admitted to the ICU during service care transition between 2019 and 2020. Participants are enrolled weekly and stratified to either a resident service transition or control (non-transition) group. We examined consecutive inpatient deaths with a primary outcome of antimicrobial changes - defined as an antibiotic, antiviral or antifungal discontinuation, addition or switch before the recommended completion date. Changes made prior to date of enrollment were excluded. Mantel-Haenszel chi-square test and multilevel logistic regression were used for analysis.

**Summary of Results** Among 70 patients who died in the hospital, mean age was 59.5±14.1, 59% were male, 33% Caucasian, 57% Black, 10% Other/Unknown, mean acute Physiology and Chronic Health Evaluation (APACHE II) score was 26.0 ± 7.0, and the average length of stay was 13.0 ± 10.5. 43 patients experienced resident service care transition while 27 did not. Demographics were similar between groups. The number of antimicrobial changes for transition versus control was 1.48 ± 1.67 and 0.63 ± 0.93, p=0.02, respectively. Antimicrobial changes were increased significantly in transition patients as compared to control [odds ratio (OR) 3.04 (95% CI 1.19–7.79)]. When adjusted for age, sex, APACHE II score, and length of stay, the risk for antimicrobial changes remained significantly increased [adjusted OR 3.37 (95% CI 1.15–9.86)] in transition vs control patients.

**Conclusions** Among ICU patients who suffer a fatal outcome, resident service transition of care was associated with a significant increase in antimicrobial changes. Though a small sample size, these preliminary findings suggest that service care transition may contribute to detrimental clinical care changes in the ICU.
A CASE OF PARANEOPLASTIC MYASTHENIA GRAVIS SECONDARY TO SQUAMOUS CELL CARCINOMA

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10.1136/jim-2021-SRMC.591

Case Report Myasthenia Gravis (MG) is an autoimmune disease in which acetylcholine receptor antibodies attack acetylcholine receptors at the neuromuscular Junction resulting in progressive voluntary muscle weakness with repetitive use.

Case A seventy-five year old man with a history of unresectable squamous cell carcinoma of the lung was transferred from an outside medical facility for investigation of a left lung consolidation. On arrival he reported shortness of breath and progressive generalized weakness to the point that he was unable to rise from a chair. He had received multiple radiation and chemotherapy treatments 6 months previously. Labs on admission revealed pancytopenia, CRP 137.7 mg/dl, ESR 100 mm/hr, ferritin 1224 ng/ml. On physical exam he had significant kyphosis with an inability to lift his head, blurred vision, gait instability, and impaired balance. A CT chest revealed mixed multifocal consolidative opacities of the L upper lobe and lingula. He was started on azithromycin and ceftriaxone for potential community acquired pneumonia. Outpatient records showed he had been following with a neurologist for management of myasthenia gravis which had been diagnosed one month after his diagnosis of lung cancer. He was initially treated with pyridostigmine, but this was discontinued due to diarrhea. He was also admitted to a long-term acute care facility for IVIG treatment prior to this hospital visit. A serologic test revealed an ACh receptor antibody value of 28.3 (0–0.24). Ultimately, the pulmonary opacities were deemed to be due to radiation pneumonitis, for which antibiotics were stopped and prednisone was initiated. Physical therapy provided functional improvement. He was discharged with oral prednisone, sulfa-trimethoprim and provided outpatient follow up.

Discussion Myasthenia gravis is a relatively uncommon disorder. However, it is the most common neuromuscular junction disorder. The age of onset is in the second and third decade for women and the sixth to eighth decade in men. Although 10–15% of myasthenia gravis are of late onset, this patient did not. We believed he developed myasthenia gravis as a paraneoplastic consequence of his squamous cell carcinoma.

DOES WHERE YOU LIVE MATTER? RURALITY AND OUTCOMES FOR CHILDREN WITH SEVERE ASTHMA EXACERBATION

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10.1136/jim-2021-SRMC.592

Purpose of Study Rurality has been linked to asthma prevalence and outcomes. We examined the relationship between rurality and outcomes of children admitted with severe asthma to a pediatric ICU in a tertiary urban center.

Methods Chart audit of children (2–18 years) with severe asthma exacerbation between 9/2013 and 1/2020 was performed. Out of state residents and those missing residential information were excluded. Demographic data, including residential zip code, and ICU outcomes (length of stay (LOS), readmissions and mortality) were collected. Rurality was determined using rural-urban commuting area codes.

Summary of Results 517 patients (623 admissions) were analyzed: median age was 7.3 years (IQR:5.2–11.3); 187 (36%) were female; 86.5% were urban residents; 13.5% were rural residents. 91% of urban residents vs 4% of rural residents lived within 50 miles of our facility. Among urban residents, 53% were black and 26.2% white while among rural residents, 54.3% were white and 17.1% were black (p <0.01). 73 patients (14%) had ICU readmissions, of which 64% were black. 17.7% of urban residents vs 4.1% of rural residents had ICU readmissions (p=0.0052). Eleven readmissions occurred within 30 days of prior ICU admission; all were urban residents and 6 (55%) were black. ICU LOS and mortality were not significantly associated with rurality.

Conclusions Urban residents were more likely to have ICU readmission for severe asthma. Proximity to an urban center, more severe asthma and/or smaller proportion of rural residents admitted to our facility, are plausible reasons. A population based study is needed to validate these findings.

TRENDS OF NEONATAL AND INFANT RESUSCITATION IN VARIOUS INTENSIVE CARE UNITS

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10.1136/jim-2021-SRMC.593

Purpose of Study Neonatal Resuscitation Program (NRP) originally designed to support the transitional physiology has extended to Neonatal Intensive Care Unit (NICU) and beyond. American Heart Association (AHA) says NRP should be used for cardiopulmonary resuscitation (CPR) at birth and at any time during the initial hospitalization. NRP may not be ideal in infants who stay beyond the neonatal period in the NICU. No published recommendations concerning the chronologic age at which NRP should be changed to Pediatric advanced life support (PALS).

Aim is to evaluate the resuscitative methods and interventions used in neonates in various ICUs in a children’s hospital and evaluate the variation in the type of resuscitative algorithms used and outcomes.

Methods Used All the infants who underwent CPR in the NICU and the term infants who are <4 wks old and preterm infants <44 wks PMA who underwent CPR in other ICUs between January 2015 through December 2018 were identified. Retrospective review of the code record was conducted. Demographics, resuscitation methods, medications, interventions and outcomes were recorded and compared between the two groups. Chi-square, Fisher exact test and t tests were used to for comparison.

Summary of Results A total of 50 infants in the NICU (20% of the infants had a major congenital heart disease and 30% of infants were > 44wks PMA) and 34 neonates in other ICUs required CPR. Irrespective of the gestational age and etiology of arrest, NRP compression ventilation (C:V) ratio was used on all infants in the NICU and PALS C:V ratio was used on all neonates in other ICUs. The gestational age at birth, PMA at arrest and etiology of arrest. There is a significant increase in the use of sodium bicarbonate, atropine, calcium chloride (not recommended by NRP) and use of portable ultrasound to determine cardiac activity in neonates.
resuscitated in other ICUs. All other variables were similar between the two groups.

**Conclusions** There is a huge variation in resuscitation methods used in infants beyond the neonatal period in the NICU and in neonates resuscitated in other ICUs in terms of medications used, interventions and C:P ratio for CPR. Such variation may influence the outcomes. Guidelines describing criterion for using PALS algorithm in the NICU and using NRP for neonates in other ICUs should be implemented.

**594** TIME TO LIMIT THE AMOUNT OF CAFFEINE IN SUPPLEMENTS?

D Dave*, RI Hazam, M Khan, H Yousuf, T Naguib. Texas Tech University Health Sciences Center, Amarillo, TX

10.1136/jim-2021-SRMC.594

**Case Report** 90% of the world’s population consume caffeine on a daily basis. Caffeine overdose is rare. We report a case of a patient who presented with sudden collapse that we believe was due to caffeine toxicity.

A 28 year old male presented with sudden collapse and unresponsiveness. As per EMS, the patient was hypertensive, tachycardic, clenched with rigidity and combative. He required heavy sedation and was intubated on the scene. Lab work revealed elevated troponin and lactate, rhabdomyolysis and acute kidney injury. EKG showed sinus tachycardia. CT of the head and urine toxicology were unremarkable. History revealed daily consumption of energy drinks including Monster as well as nutritional supplement use with increased usage over the past one month. His daily average caffeine use was estimated at about 200 mg/day. EEG revealed no ictal or interictal discharges though he had widespread beta activity that could be consistent with excessive caffeine use. Unfortunately blood caffeine levels were not drawn on the day of admission and the levels were negative after 2 days of hospitalisation. With supportive care, our patient showed significant improvement, was extubated on day 4, and was discharged home after resolution of AKI and encephalopathy.

Caffeine toxicity is rarely recognized. Cardio-vascular abnormalities are the most commonly reported adverse events, though central nervous system toxicity including seizure activity is common. Caffeine consumption has no stated limit and can be incrementally additive to dangerous levels. Our case highlights the dangers of excessive caffeine consumption in today’s world where caffeine is readily available in all forms and is widely accepted as the norm. The question of how much caffeine is too much? is a question that has been raised for ages with no good answer. However, this case emphasises the need to consider recommendations to limit the daily allowance as well as to enlighten the public regularly about the negative consequences of excess chronic consumption of caffeinated products.

**595** ABSTRACT WITHDRAWN

**596** OPEN ABDOMEN: A RARE CASE OF COVID-19 ACUTE PANCREATITIS-ASSOCIATED ABDOMINAL COMPARTMENT SYNDROME

M Delgados*, A Nieves-Ortiz, JL Ayala Rivera, V Fonseca-Ferrer, K Hernandez Moya. San Juan City Hospital, Canovanas

10.1136/jim-2021-SRMC.596

**Case Report** The pandemic of coronavirus disease-19 (COVID-19) has reached above 36,000,000 confirmed cases worldwide since December 2019. The infection primarily affects the respiratory system, although multiple organ systems may be affected, including gastrointestinal. Symptoms such as abdominal pain, diarrhea, nausea, and vomiting have been reported.

Case of a 47-year-old male with a medical history of dyslipidemia, non-compliance with treatment, diagnosed 16 years ago who presents to ED with complaints of acute epigastric pain, 10/10 in intensity, with radiation to his back, associated with nausea and non-bloody emesis, with no relation to meals or previous history of similar symptoms. Physical Examination remarkable for abdominal generalized tenderness, decreased BS and distention.

Labs revealed marked elevation in amylase, lipase, and TG. Abdominal CT Scan confirmed severe pancreatitis with fat stranding, fluid, and hepatomegaly of 23 cm. Workup of
Severe Acute Pancreatitis secondary to Very Severe Hypertriglyceridemia was made. Treatment was aggressive intravenous hydration, pain management, insulin drip, and calcium supplementation. After initial management for acute pancreatitis, the patient’s clinical state declined from an Intra-abdominal Hypertension to an Abdominal Compartment Syndrome with worsening renal function. Urgent decompression of the abdominal cavity was done via exploratory laparotomy with no bowel compromise noted, ascites drainage of approximately 1000 mL and pancreas saponification which required Bogota bag application by Surgeon. COVID-19 PCR assay done before the surgical procedure was positive.

The presence and high expression of ACE2 in the exocrine glands and islet cells during SARS-CoV-2 infection could lead to acute inflammation. More studies should be conducted to identify the role of COVID-19 in acute pancreatitis, even in patients with preexisting etiologies. This case is aimed for physicians to think of Covid 19 as a possible cause of acute pancreatitis as noted with other viruses such as measles, mumps, EBV, among others. Although clear pathogenesis is still being studied, early diagnosis will reduce risk of life threatening complications such as abdominal compartment syndrome.

### 597 HIV-ASSOCIATED PULMONARY HYPERTENSION IN A REAL-WORLD COHORT: PARTICIPANT CHARACTERISTICS AND POTENTIAL ETIOLOGIES

**1K Desai*, 2K Harrington, 1,2SC Auld, 1J Aneja, 1J Prevot, 1M Nguyen, 2BS Statieh. 2Emory University School of Medicine, Atlanta, GA; 2Emory University School of Public Health, Atlanta, GA**

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*Purpose of Study* Although HIV is known to greatly increase the risk of pulmonary hypertension (PH), limited data exists regarding the prevalence of HIV-associated PH in a real-world setting. The aim of this study was to characterize the demographics, prevalence, and etiology of PH in a real-world cohort of people with HIV.

*Methods Used* We extracted demographic and clinical data from the electronic medical record for a period between July 1, 2013 and June 30, 2018 from a freestanding HIV clinic in Atlanta, GA. Echocardiographic data was utilized to determine the potential etiology and severity of PH, which was defined based on an estimated RVSP ≥ 35 mmHg.

*Summary of Results* Out of 8,387 participants, transthoracic echocardiograms (TTEs) were ordered on 1,351 (16%). Those subjects had a lower CD4 cell count, higher rates of pulmonary symptoms and diagnoses, and higher crude mortality. Among subjects who had TTEs, 284 (21%) had PH, most of whom had mild disease (64%, RVSP 36–45 mmHg). Many of those with PH had evidence of left-sided cardiac dysfunction (49%), and fewer had evidence of pulmonary disease on pulmonary function testing (10%). No correlation was found between CD4 count and RVSP or between diffusing capacity for carbon monoxide (DLCO) and RVSP.

*Conclusions* We found a substantial burden of HIV-associated PH, and the most common appreciable etiology was left-sided heart disease. The percentage of subjects with left-sided disease was significantly lower than what was found in prior studies (~85%). Further, although DLCO is known to be a common pulmonary function abnormality in HIV and is sometimes attributed to PH, we were unable to find any relationship between DLCO and RVSP. We were also unable to find any relationship between RVSP and CD4 count, which accords well with prior studies. These data highlight the significant burden of PH among subjects with HIV in a real-world setting and emphasize the importance of proper work-up to facilitate appropriate treatment.

### 598 RECURRENT CHYLOUS ASCITES AND TRANSUDATIVE CHYLOTHORAX DUE TO CONGESTIVE HEART FAILURE

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| 10.1136/jim-2021-SRMC.598 |

*Case Report* Chyle is transported by the lymphatic system, but when it leaks out, it is chylothorax. Chylothorax is a pleural effusion of greater than 110 mg/dL of triglycerides with a milky appearance. Transudative chylothorax is rare which is differentiated by Light criteria as transudative and exudative. We present a case of transudative chylothorax with concurrent chylosus ascites that is secondary to congestive heart failure. A 70 year-old male with congestive heart failure with ejection fraction of 10%, coronary artery disease status post coronary artery bypass graft, sleep apnea, chronic kidney disease stage 3, and chronic obstructive pulmonary disease presented with worsening abdominal distention, shortness of breath, and increased lower extremities edema for a couple of days. He uses 3 L of oxygen. He denied any cough or fever but had orthopnea and paroxysmal dyspnea. He takes lasix 40 mg daily and bumex 2 mg twice a day. He requires monthly paracentesis with drainage of 5–9 liters each time. Upon physical exam, he had crackles bilaterally with no wheezes or jugular venous distension. His cardiac exam was unremarkable. He did have abdominal distension with dullness to percussion and a positive fluid wave. There was also +2 bilateral pitting edema of the lower extremities. His vitals were stable. His lab was unremarkable. His chest x-ray showed moderate right pleural effusion. A chest CT showed moderate right pleural effusion with compression atelectasis and moderate ascites. He had a diagnostic paracentesis in which 9.2 L of cloudy milky fluid was drained. He had a trial of IV lasix, but the next day, he still had a moderate sized pleural effusion on ultrasound. He had a therapeutic thoracentesis in which 1.1 liter of milky fluid was drained. Pleural fluid for triglycerides was 280. After the thoracentesis and paracentesis, his dyspnea improved to where he was discharged home. He did need another paracentesis two months later in which the peritoneal fluid was tested for triglycerides, which was 671 confirming chylous ascites. He is on conservative management with monthly paracentesis, medium chain triglyceride diet, lasix, and bumex for fluid diuresis. He is maintaining an overall negative balance daily and is doing well in between paracentesis.

### 599 REFRACTORY SPONTANEOUS PNEUMOTHORAX: A MANAGEMENT CHALLENGE

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| 10.1136/jim-2021-SRMC.599 |

*Abstract* We present a case of transudative chylothorax with concurrent chylosus ascites that is secondary to congestive heart failure. A 70 year-old male with congestive heart failure with ejection fraction of 10%, coronary artery disease status post coronary artery bypass graft, sleep apnea, chronic kidney disease stage 3, and chronic obstructive pulmonary disease presented with worsening abdominal distention, shortness of breath, and increased lower extremities edema for a couple of days. He uses 3 L of oxygen. He denied any cough or fever but had orthopnea and paroxysmal dyspnea. He takes lasix 40 mg daily and bumex 2 mg twice a day. He requires monthly paracentesis with drainage of 5–9 liters each time. Upon physical exam, he had crackles bilaterally with no wheezes or jugular venous distension. His cardiac exam was unremarkable. He did have abdominal distension with dullness to percussion and a positive fluid wave. There was also +2 bilateral pitting edema of the lower extremities. His vitals were stable. His lab was unremarkable. His chest x-ray showed moderate right pleural effusion. A chest CT showed moderate right pleural effusion with compression atelectasis and moderate ascites. He had a diagnostic paracentesis in which 9.2 L of cloudy milky fluid was drained. He had a trial of IV lasix, but the next day, he still had a moderate sized pleural effusion on ultrasound. He had a therapeutic thoracentesis in which 1.1 liter of milky fluid was drained. Pleural fluid for triglycerides was 280. After the thoracentesis and paracentesis, his dyspnea improved to where he was discharged home. He did need another paracentesis two months later in which the peritoneal fluid was tested for triglycerides, which was 671 confirming chylous ascites. He is on conservative management with monthly paracentesis, medium chain triglyceride diet, lasix, and bumex for fluid diuresis. He is maintaining an overall negative balance daily and is doing well in between paracentesis.
Case Report Pneumothorax that occurs without trauma and underlying lung disease is categorized as a primary spontaneous pneumothorax. Smoking, young age, thin built, tall stature and male sex are the main risk factors. Thousands of cases are seen in the US yearly, but there is a practice variation in its management. Pneumothorax with persistent air leakage after 7 days despite chest tube drainage is considered a Refractory Spontaneous Pneumothorax (RSP). We report an RSP case that failed pleurodesis and bronchoscopic intervention and required open thoracotomy.

A 28-year old healthy patient presented with sudden onset of shortness of breath at rest. He used to smoke cigarettes and Marijuana but quit 3 years ago. Examination revealed cyanosis, tachypnea, and decreased breath sounds on the right side of the chest. The chest x-ray revealed right pneumothorax with near-complete right lung collapse. A chest tube with a Heimlich valve was placed, and he was hospitalized. Due to a lack of full lung re-expansion, a suction with a water seal was applied. He underwent talc pleurodesis through chest tube and bronchoscopic endobronchial valve placement on day 10. Despite all interventions, residual pneumothorax and air leak persisted. On day 15, he underwent right thoracotomy, upper lobe blebectomy, wedge resection and mechanical pleurodesis. He recovered uneventfully and was discharged.

The treatment of RSP has been a challenge for physicians. Per the American College of Chest Physicians, patients with large pneumothoraces should be hospitalized and managed with a placement of a chest tube attached to a Heimlich valve or a water seal device. Suction should be applied if the lung fails to reexpand. Patients with air leaks persisting > 4 days should be evaluated for surgery and chemical pleurodesis. Instilling sclerosing agents through the chest tube is not recommended unless surgery is contraindicated. Further options include thoracotomy or video-assisted thoracoscopic surgery (VATS) for bullae resection. Prospective studies are needed to determine the proper timing, safety and efficacy of each therapeutic intervention.

601 LUNG ABSCESS MASQUERADING AS LUNG TUMOR: A CASE PRESENTATION

1American University of Beirut, Beirut, Lebanon; 2Texas Tech University Health Sciences Center, Lubbock, TX

Case Report Lung abscesses are usually polymicrobial infections. A lung abscess’s radiologic appearance can closely resemble that of a tumor, leading to expensive and risky procedures. We present a case of a lung abscess mimicking malignancy.

Case presentation A 71-year-old man with no known past medical history presented with a productive cough, whitish sputum with occasional bloody streaks, dyspnea, and night sweats for 4 weeks. Labs showed a WBC count of 7600 cells/mm3 with 77% neutrophils. CT chest without contrast showed a right upper lobe pleural-based soft tissue mass (4.3 × 3.1 × 3.9 cm) and prominent mediastinal lymph nodes (figure A). PET CT was then ordered, and it showed an FDG-avid lung mass (figure B). Initial infectious work-up was negative, including tuberculosis. A CT-guided core biopsy of the right upper lobe lung lesion showed acute pneumonitis with fibrinopurulent exudates. Since malignancy was high on the differential, EBUS with biopsy was attempted. Cytology was negative for malignancy, with 50% macrophages and 50% neutrophils. Only the bronchial culture taken through the
EBUS grew *H. parahaemolyticus* and *S. aureus*. Failing to reveal signs of malignancy, thoracoscopy with right upper lobectomy was done. The pathology result came back negative for malignancy, but the culture grew *S. intermedius*. The patient improved with 2 weeks of cefazolin.

Discussion This patient presented with symptoms and imaging findings suggestive of malignancy. Since the yield of a CT-guided core biopsy and EBUS with biopsy depends on the sample and the lesion’s accessibility, the negative results were not enough to exclude malignancy. When the pathology of the resected right upper lobe was non-revealing, malignancy was excluded. We believe that a trial of antimicrobial therapy in our patient could have spared him unnecessary procedures.

Deep Sedation for Ophthalmology Procedures Outside the Operating Room

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10.1136/jim-2021-SRMC.602

Purpose of Study In appropriate settings, procedural deep sedation is safe and effective. Respiratory complications occur in 3–10% of all patients receiving deep sedation. Deep sedation is frequently used and studied in fields such as radiology, hematology-oncology, and neurology. However, little data exists in evaluating its safety and efficacy in invasive ophthalmology procedures.

Methods Used A retrospective review was conducted on 125 ophthalmology subjects who received deep sedation. Medications included a combination of Propofol, Fentanyl or Ketamine. Subjects received deep sedation for; unilateral/bilateral nasolacrimal duct stent, chalazion, skin tag, and papilloma removal, ERG, or eye exam under anesthesia. Data was then compared to a control group of 1037 receiving sedation for similarly invasive procedures: lumbar puncture with intrathecal chemo administration, bone marrow aspiration and biopsies, and Botox injections.

Summary of Results Of the 125 subjects reviewed, 19 (15.2%) experienced respiratory or upper airway complications requiring intervention. 12 required bag mask ventilation, 3 experienced hypoxia requiring more oxygen, 2 needed oral/nasal airway, 1 experienced a benign arrhythmia, and 1 had an allergic reaction. No subjects required cardiopulmonary resuscitation or unplanned hospital admission. All 125 attempted ophthalmology cases were completed successfully. Subjects who experienced complications received a statistically significant larger dose of medication (P=0.009) than those with no complications. All ophthalmology procedures were completed in an outpatient setting and patients were discharged after recovery from sedation. In comparison only 3.8% of the control group suffered complications, and 96% of procedures were completed successfully.

Conclusions Statistical significance was found between complication rates of ophthalmology procedures and other procedures more commonly performed under deep sedation (P<0.001). There was no statistical significance between complication rate and gender, ethnicity or procedure performed. Although higher in complication rate, when performed in the appropriate hospital setting with trained staff, deep sedation is an alternative to general anesthesia for minimally to moderately invasive ophthalmology procedures in pediatric patients.

Abstract 603 Table 1 Profile of patients who completed (Group 1) and who dropped out (Group 2) of the pulmonary rehabilitation program

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Age (years)</th>
<th>Gender</th>
<th>FEV1 (liters)</th>
<th>% FEV1</th>
<th>6-minute walk (feet)</th>
<th>Number of hospitalizations</th>
</tr>
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<tbody>
<tr>
<td>GROUP 1</td>
<td></td>
<td></td>
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<tr>
<td>N=144</td>
<td>M: 72</td>
<td>Female:69</td>
<td>M: 1.54</td>
<td>M:56.84</td>
<td>M: 802.80</td>
<td>M: 1.11</td>
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<tr>
<td></td>
<td>SD: 10.11</td>
<td></td>
<td>SD: 0.646</td>
<td>SD: 20.96</td>
<td>SD: 325.54</td>
<td>N: 129</td>
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<tr>
<td></td>
<td>Male: 75</td>
<td>N: 126</td>
<td>N: 138</td>
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<tr>
<td></td>
<td>N: 144</td>
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<td>GROUP 2</td>
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<tr>
<td>N=133</td>
<td>M: 67.81</td>
<td>Female:82</td>
<td>M: 1.5075</td>
<td>M:54.88</td>
<td>M: 703.77</td>
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<td>SD: 297.86</td>
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<td>Male: 52</td>
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<td>N: 134</td>
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<tr>
<td>P value</td>
<td>0.005</td>
<td>Chi square</td>
<td>0.6901</td>
<td>0.5041</td>
<td>0.0010</td>
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</tr>
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</table>

N: number of subjects; M: mean; SD: standard deviation; FEV1: forced expiratory volume in one second.

Purpose of Study Pulmonary rehabilitation (PR) is an evidence-based, non-pharmacological therapy for patients with COPD to improve dyspnea, exercise capacity, and health-related quality of life. Despite the clear benefits associated with PR, there is a significant drop-out rate associated with worse clinical outcomes. The following study aims to investigate the profile of patients with chronic lung disease who did not complete the PR program at the University Medical Center in Lubbock, Texas.

Methods Used We retrospectively reviewed the medical records of patients who completed and dropped out from the PR program during 2014 to 2019. The adherent and non-adherent patients were compared based on age, gender, FEV1,% FEV1, 6-minute walk distance, and number of hospitalizations prior to the initiation of PR. Variables were analyzed using means ± standard deviations and percentages. Comparisons between groups were made using paired t-tests or chi-square tests with the GraphPad software. P-values ≤ 0.05 were considered statistically significant.

Summary of Results Forty-eight percent of 277 patients withdrew from the pulmonary rehabilitation program. The mean number of sessions in the drop out group was 12.35 ± 14.15. More females and younger patients were in the drop out group. There were no significant differences in FEV1 and %FEV1 between the two groups. Patients who withdrew from the pulmonary rehabilitation program had a lower initial 6-minute walk distance and a higher number of hospital visits (table 1).

Conclusions Predictors of non-adherence to PR include younger age, female gender, worse exercise tolerance and more hospital visits. Program coordinators need to spend extra
time with these patients in an effort to determine barriers to participation and improve completion rates.

**Abstracts**

**604** DOUBLY BLINDED: AN UNCOMMON CAUSE OF ACUTE VISUAL LOSS DUE TO ORBITAL COMPARTMENT SYNDROME

D Nair*, K Sawalha. White River Health System, Batesville, AR

10.1136/jim-2021-SRMC.604

Case Report Retro-bulbar hemorrhage (RBH) is a rare, rapidly progressing, sight-threatening emergency that results in an accumulation of blood in the retro-bulbar space. This blood accumulation acts as a compartment syndrome in which increased intra-ocular pressure. This, in turn, can result in irreversible blindness if not managed quickly. Early recognition of symptoms and clinical signs within two hours is the mainstay of management. In this case, a patient had spontaneous retro-bulbar hemorrhage after implantation of a Watchman device. Despite early intervention, the patient’s vision was lost.

Case presentation A 68-year-old female patient with a history of atrial fibrillation and hypertension presented for her Watchman device implantation. Her anticoagulation regimen included Eliquis and Plavix. Four days prior to her procedure, she recalled having a left-sided headache that for which she did not seek medical attention. The patient underwent successful placement of the left atrial appendage device with no immediate complications. Two hours after the procedure, she had nausea and left-sided diplopia along with left eye swelling and severe pain. Immediate CT scan of the head revealed left peri-orbital soft tissue swelling with a left superior orbital hyperdense mass concerning for hematoma measuring 3.7 × 2.9 × 1.5 cm. Urgent left canthotomy with cantholysis was done bedside. However, despite all immediate interventions, the patient’s vision was lost in her left eye.

Conclusion Spontaneous retrobulbar hematoma is an emergent phenomenon that is usually associated with trauma. Brain Imaging with CT is preferred due to its fast and better visualization of the bony anatomy. RBH occurs in a confined orbital space that is surrounded by a bony wall; this results an orbital compartment syndrome, a true ophthalmologic emergency that requires early surgical intervention and should not be delayed by diagnostic imaging.

**605** ‘GOLDEN LUNGS’: PULMONARY ACTINOMYCOSIS A RARE CAVITARY DISEASE

A Nieves-Ortiz*, V Fonseca-Ferrer, K Hernandez Moya, L Piñeiro. San Juan City Hospital, Canovanas, PR

10.1136/jim-2021-SRMC.605

Case Report Actinomycosis is an uncommon, chronic granulomatous disease caused by gram-positive bacilli, non-acid fast, and filamentous with sulfur granules bacteria. Infection commonly involves the cervicofacial area, abdominal, and in rare occasions the lungs. It is more common in men and affects middle-aged individuals.

We present a case of a 51-year-old man patient with medical history of a former smoker who presented to ED due to dyspnea on exertion of 3 months of evolution and dry cough in the last 2 weeks ago. Patient was treated outpatient with levofloxacin for 14 days with no resolution of symptoms. Denied fever, chills, night sweats, hemoptysis, weight loss or weight gain, pitting edema, and orthopnea. Vital signs were remarkable for sinus bradycardia. Physical examination without abnormal findings. Laboratory chemistry unremarkable and CBC remarkable for leukocytosis with stable hemoglobin and normal platelet count. Chest CT remarkable for left upper lobe posterior segment cavitary lesion with thick borders measuring approximately 3.5 × 4.5 cm. Patient was empirically treated with IV antibiotics for community-acquired pneumonia. Sputum culture and acid-fast came negative. Other laboratories Influenza, and Mycoplasma were negative. Differentials at the time included abscess, tuberculosis, granulomatous disease vs lung malignancy. Sputum cytology showed the presence of filamentous bacteria with sulfur granules suggestive of actinomyces. Antibacterial therapy was deescalated to amoxicillin upon cytological findings.

Diagnosis is usually based on histology with the identification of actinomyces species sulfur granules and/or culture of Actinomyces. Early diagnosis of pulmonary actinomycosis decreases the risk of indolent complications such as lung cavities, pulmonary fibrosis, and localized necrosis. Usually warrants a good prognosis and reduces the need for surgery in late stages of the disease if properly treated with penicillin.

The aim of this case is for physicians to recognized pulmonary actinomycosis as a possible differential diagnosis in cases of lung cavitary lesions as those of suspected TB or space-occupying lesions with associated nonspecific symptoms; more common in those with poor oral hygiene or an underlying lung disease such as COPD.

**606** HIV-ASSOCIATED AIRWAY DISEASE: CHARACTERISTICS AND DIAGNOSTIC TESTING OF A REAL-WORLD COHORT


10.1136/jim-2021-SRMC.606

Purpose of Study In addition to their increased risk for infectious complications, people with HIV (PWH) are also at a significantly higher risk for non-infectious pulmonary complications that cause significant morbidity and mortality. However, little evidence exists as to how these patients are diagnosed and managed in a real-world setting.

Methods Used Clinical and demographic data were abstracted from the EMR of participants seen at a freestanding HIV clinic in Atlanta, GA between July 1, 2013 and June 30, 2018. Pulmonary diagnoses were determined using ICD-9 or -10 codes. For participants who had pulmonary function tests (PFTs) performed, data were abstracted from narrative reports of chest CT scans. Data were analyzed using the t test for continuous variables and chi-square test for categorical variables.

Summary of Results Of the 8,387 subjects seen during the study period, around half reported a pulmonary symptom (3,902), and 498 of those subjects had PFTs performed. Subjects with PFTs were more likely to be smokers, had a higher average BMI, and were older. The most common findings on PFTs were a decrease in DLCO (59.2%) and airflow limitation (33%). Of the group who had both PFTs and CT scans of the chest, half had radiographic evidence of emphysema.
A substantial percentage had CT evidence of emphysema without airflow limitation by PFTs (50/117, 43%), but most who met PFT criteria for airflow limitation had CT evidence of emphysema (68/99, 68%). There was no correlation between CD4 count and forced expiratory volume in 1 second (FEV1).

Conclusions These data confirm a significant burden of non-infectious pulmonary disease among PWH. Although PFTs were only obtained in ##% of the cohort, the most common PFT abnormality was a decreased DLCO, which accords well with studies of research cohorts. Interestingly, the number of symptomatic patients with radiographic evidence of emphysema who did not meet PFT criteria for airflow limitation was quite high. This finding deserves further study into potential phenotypic differences between subjects with emphysema with and without HIV. In addition, the lack of relationship between CD4 and FEV1 warrants further investigation into the mechanism of HIV-associated airway diseases.

### 607 THE UTILITY OF BRAIN NATRIURETIC PEPTIDE IN PATIENTS WITH PULMONARY HYPERTENSION

S Rao*, O Hosseini, B Daines, V Test, K Nugent. Texas Tech University System, Richmond, TX

10.1136/jim-2021-SRMC.607

Purpose of Study Brain natriuretic peptide (BNP) is a polypeptide released from cardiac ventricles used as a diagnostic marker in cardiovascular diseases due to higher levels in volume overload. Investigators have reported significant increases in BNP in patients with elevated pulmonary pressures in conditions such as systemic sclerosis. Higher BNP levels in patients in particular functional classes or WHO groups could help in the evaluation of these patients.

Methods Used Data were collected on patients from the Pulmonary Vascular Disease clinic undergoing right heart catheterization between 1/1/2019 and 5/20/2020. Clinical information, BNP levels, and outcomes were recorded. Patients were classified using the WHO Functional Classification and WHO Pulmonary Hypertension Classification.

Summary of Results This study included 105 patients evaluated for pulmonary hypertension (PH) with BNP values. The mean age was 63; female to male ratio was 2:1. The mean BNP level was 2360.78 ± 1430.73 pg/ml. Patients in higher WHO functional classes tended to have higher BNP levels (table 1), but statistical analysis using log(BNP) showed no differences between the functional groups. Patients in WHO group 4 had significantly higher log(BNP) levels than other WHO groups (table 1).

Conclusions Patients undergoing evaluation for PH had a wide range of BNP values. Patients with increased functional limitation had higher BNP levels. Patients in WHO Group 4 had significantly higher BNP levels. BNP measurement provides an independent test to help interpret patients’ description of their functional limitations and potentially helps identify patients with chronic thromboembolic disease.

### 608 USING THREE-DIMENSIONAL (3D) MOTION ANALYSIS DURING PEDIATRIC CARDIOPULMONARY RESUSCITATION (CPR) SIMULATIONS TO ASSESS RESCUE PERFORMANCE

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10.1136/jim-2021-SRMC.608

Purpose of Study Outcomes of pediatric CPR events have improved over time, in part due to better quality of chest compressions, measured by compression rate, depth and force. Recent changes in the Pediatric Basic Life Support (BLS) guidelines suggest ‘changing’ rescuers, rather than ‘alternate’, every 2 minutes when performing CPR. The study’s purpose was to assess chest compression quality and rescuer fatigue while using 3D motion analysis during pediatric CPR simulations.

Methods Used This pilot study included 20 healthcare providers certified in Pediatric BLS who are expected to perform CPR in a hospital setting. Participants performed 3 rounds of continuous chest compressions for 2-minute intervals with 6 minutes of rest between rounds. Compression quality was measured using 3D motion analysis. Fatigue was measured by continuous heart rate (HR) monitors. Paired t-tests were used to assess change in performance measures from one rotation to the next.

Summary of Results There were 20 participants, 14 females and 6 males, ages 25 – 39 years. Body mass index ranged 18.6 – 36.6 with 65% being overweight or obese. Final analysis of the data did not show statistically significant variation in compression rate, depth, or force from the standard mean of participants’ data to suggest the participants experienced fatigue during each 2-minute interval of compressions. However, majority of participants exhibited tachycardia, with participants’ HR approaching 63% of maximum and 30% of participants exhibiting HR levels for vigorous activity as defined by the American Heart Association. There was a significant linear trend of a decreased forward force applied to the rescuers, with changing rescuers, it is important to consider the clinical signs of fatigue participants exhibited. Despite indications of physiologic fatigue, the trend of decreased forward force applied showed participants’ form improved and compression quality remained consistent.
VOCAL CORD DYSFUNCTION – A PUZZLING CASE OF ASTHMA

S Srimanthula*, N Mehd. The University of Oklahoma Health Sciences Center, Oklahoma City, OK
10.1136/jim-2021-SRMC.609

Case Report Vocal cord dysfunction (VCD) is a paradoxical involuntary closure of vocal cords during respiration that can result in upper airway obstruction. It is a confounding malady that can mimic status asthmaticus. VCD often results in unnecessary care, which provides little to no relief of symptoms and may exacerbate anxiety (one of its causative factors). The etiology of VCD is complex and often multifactorial. Here we describe a case of anxiety induced VCD in a teenage girl who was admitted for treatment of anorexia nervosa. Pulmonology was consulted for asthma management after failure to respond to standard protocol. History of sudden voice loss and exam findings of stridor with accessory neck muscle usage with normal lung sounds provided diagnostic clues pointing to VCD. PFT demonstrated flattening of both inspiratory and expiratory air flow, indicating upper airway constriction. Subsequently, direct laryngoscopy was performed which showed paradoxical motion of the vocal cords, a pathognomonic feature of VCD. Post cricoid inflammation was also seen providing evidence of GERD, another known causative factor of VCD. The patient was managed with relaxation breathing techniques, speech therapy, and Pantoprazole to relieve the vocal cord spasms. In this instance, the patient improved rapidly with resolution of stridor, voice loss, and PFT abnormalities. In summary, VCD is a nebulous and hard to identify disease that presents with asthma-like symptoms. Therefore, VCD should be considered in any patient with concomitant anxiety or other confounding mental disorders who do not respond well to standard treatment modalities.

Abstract 609 Figure 1

METFORMIN ASSOCIATED LACTIC ACIDOSIS MIMICKING ISCHEMIC BOWEL DISEASE

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10.1136/jim-2021-SRMC.610

Case Report Metformin is considered a safe treatment option and is the treatment of choice for type 2 diabetes mellitus even in the presence of mild to moderate renal insufficiency. It has also been a well-recognized cause of lactic acidosis for several years, especially in individuals with kidney disease. However, most reports are related to intentional overdose and reflect high mortality especially when lactate levels exceed 20 mmol/L.

We present a 64 yr old female who came in with acute onset severe abdominal pain out of proportion to physical exam who was found to have severe metabolic acidosis secondary to lactic acidosis of 22.7 on admission, with an unknown medication list. CT Angiography of the abdomen ruled out ischemic bowel disease however the patient was found to have evidence of urinary tract infection and possible diverticulitis. Blood and urine cultures remained negative throughout the admission. The patient was admitted to the critical care unit and received IV fluid resuscitation with isotonic bicarbonate drip, broad-spectrum antibiotics, and pressors. Due to encephalopathy and severe respiratory distress on admission, she required intubation and mechanical ventilation. Subsequently, she was placed on continuous renal replacement therapy (CRRT). Abdominal laparoscopy showed no etiology for the acidosis. The medication list was located by her husband and notably included metformin and lisinopril. She began to improve promptly and was extubated in 4 days and kidney function recovered to near baseline in a week.

The lactic acidosis was thought to be caused by metformin accumulation due to acute kidney injury on top of chronic renal insufficiency, precipitated by sepsis and lisinopril. Metformin related lactic acidosis is elusive without medication history and is easily aggravated by independent factors that cause lactic acidosis like hypoxia, sepsis, renal injury, alcohol abuse, and shock. Early recognition and aggressive supportive treatment are prime in reducing high morbidity and mortality. It is important to seek medication history in these cases to make an appropriate diagnosis.

TRENDS IN ASTHMA PREVALENCE AND RISK FACTORS FROM 2006 TO 2018

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10.1136/jim-2021-SRMC.611

Purpose of Study To analyzes the trends in asthma prevalence and risk factors among adults in the US over the last decade. Methods Used We collected data from the Behavioral Risk Factor Surveillance System (BRFSS) and Environmental Protection Agency. Specifically, we reviewed the current and overall lifetime prevalence of asthma, obesity, smoking status, and particulate matter 2.5 (PM 2.5) atmospheric concentration between 2006 and 2018. Summary of Results Among the 5,820,615 responders included in the BRFSS survey, the lifetime reported prevalence of asthma increased from 11% in 2006 to 13.4% in 2018. The reported current prevalence of asthma increased from 7.3% in 2006 to 7.7% in 2018 (Graph 1). The greatest increase in lifetime prevalence was seen in the Western US; 14%. Current prevalence increased in all regions except the Midwest where it decreased by 8%. Asthma attacks during the prior year decreased from 46.7% in 2011 to 43% in 2018. Smoking decreased from 18% in 2014 to 13.8% in 2018. The prevalence of obesity among adults in the US increased from...
DIEFERENT PRESENTATIONS OF FAMILIAL PULMONARY HYPERTENSION

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10.1136/jim-2021-SRMC.612

Case Report We present a six-year-old male (sibling 1) with a history of moderate persistent asthma and allergies followed by pediatric pulmonary who later required evaluation by cardiology due to episodes of diaphoresis and altered mental status during activity. Echocardiogram showed borderline elevated pulmonary pressures, thought to be a normal variant. Surveillance follow up was scheduled. Over the next three months, he continued to experience episodes of syncope. Review of family history at that point revealed a strong family history of pulmonary hypertension. A repeat echocardiogram showed worsening pulmonary pressures, and he was admitted to the pediatric intensive care unit for further evaluation and triple therapy with sildenafil, bosentan, and epoprostenol. Cardiac catheterization revealed pulmonary vascular resistance of 18.8 Wood Units on room air. Hospital course was complicated by worsening pulmonary pressures, and he was admitted to the hospital floor for treatment of severe pulmonary hypertension. A repeat echocardiogram showed pulmonary vascular resistance greater than three Wood Units x M². In the pediatric population, it is often due to congenital heart defects, lung disease (such as bronchopulmonary dysplasia), and heritable mutations. Family history is an integral component of evaluation. The BMP2 mutation, as seen in these half-brothers, is inherited in an autosomal dominant pattern, and is known to be associated with pulmonary hypertension. These sibling cases demonstrate the different diagnostic presentations and complexity around making this diagnosis in a pediatric patient.

THE EFFECT OF PULMONARY REHABILITATION ON PHYSICAL PERFORMANCE AND MENTAL HEALTH IN PATIENTS WITH CHRONIC LUNG DISEASE

MN Vinan Vega*, B Mantilla, K Nugent. Texas Tech University Health Science Center, Lubbock, TX

10.1136/jim-2021-SRMC.613

Purpose of Study Patients with chronic lung disease have reduced exercise capacity, associated with poor quality of life and reduced survival. Pulmonary rehabilitation(PR) improves exercise capacity and health-related quality of life through a multidisciplinary approach.

Our study aimed to evaluate its effect in patients with chronic lung disease who completed the program at University Medical Center in Lubbock, Texas. We used the minimal clinically important difference(MCID) as a guide to evaluate the changes in each parameter.

Methods Used We retrospectively reviewed the 144 records of patients who completed PR at our facility between 2014 and 2019. We collected demographics, diagnoses, smoking status, pulmonary function results, and number of hospital visits 6 months prior and post completion. Pulmonary function tests included FEV1, FVC, FEV1/FVC ratio and 6-minute walk test. PHQ-9, CAT and MMRC dyspnea score were recorded prior and after completion.

Summary of Results Fifty two percent of subjects were male. Mean age 71 years, with a mean body mass index of 30.30 ±8.75 kg/m². Most of the patients had COPD 54.8%. Baseline FEV1 was 1.54L(56%) predicted. After completion of the program, 86 patients increased their 6-minute walk to exceed the MCID with a mean distance of 145.32 ft, and hospital visits were reduced by 30%, from 11.6 mg/m³ in 2006 to 8.2 mg/m³ in 2018 while the ozone level decreased by 12%.

Conclusions While the prevalence of asthma increased over the last decade, that of asthma attacks decreased. This discordant picture can be attributed to improvement in medical management. Interestingly, our analysis demonstrates that the risk factors for asthma are changing while obesity become more prevalent, air pollution and smoking rates declined.

Abstract 613 Table 1 Program outcomes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Baseline</th>
<th>After completion</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-minute walk, Ft.</td>
<td>804.401 ± 325.54 (N 143)</td>
<td>980.32 ± 319.96 (N 124)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>CAT</td>
<td>20.64 ± 6.52 (N 124)</td>
<td>16.58 ± 6.37 (N 55)</td>
<td>&lt;0.05 Z value: -3.957 W value: 254.5 (N 52)</td>
</tr>
<tr>
<td>PHQ9</td>
<td>6.9 ± 5.42 (N 73)</td>
<td>5.17 ± 4.33 (N 34)</td>
<td>&lt;0.05 Z value: -2.489 W value: 77.5 (N 26)</td>
</tr>
<tr>
<td>MMRC</td>
<td>2.24 ± 0.92 (N 105)</td>
<td>1.48 ± 1.00 (N 96)</td>
<td>&lt;0.05 Z value: 6.2055 W value: 54 (N 58)</td>
</tr>
</tbody>
</table>
visits decreased from 0.80 to 0.55 after completion (p<0.05). Psychosocial tests CAT score, PHQ9 score and MMRC had meaningful improvement (p<0.05).

Conclusions Most patients had improvement in their 6-minute walk and psychosocial scales as a reduced number of visits after completion of the rehabilitation program. Pulmonary rehabilitation has the potential to improve the lives of these patients. MCID provides a good method to evaluate program success.

Renal, electrolyte and hypertension
Joint plenary poster session
4:30 PM
Thursday, February 25, 2021

614 URINARY UREA-CREATININE RATIO AND OUTCOMES AMONG PATIENTS WITH CHRONIC KIDNEY DISEASE
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Purpose of Study While a low protein diet is recommended in CKD, there has been a concern for protein-energy wasting leading to poor outcomes. Therefore, we hypothesized that temporal change in urine urea nitrogen-creatinine ratio (UUNCR), a surrogate of dietary protein intake, predicts all-cause mortality and ESRD.

Methods Used We collected serial spot UUNCR from veterans with CKD. Among 439 patients who had data on UUNCR between 6–12 months from the initial measurement, we examined the association of baseline UUNCR and its temporal change with ESRD and all-cause mortality in cause-specific hazards models with adjustment for demographics, Charlson comorbidity index, eGFR, urinary protein, smoking, BMI.

Summary of Results Baseline UUNCR was median 5.5 g/g (IQR, 4.5–6.9), and its slope was 0.00±0.23 g/g per year. During a median follow-up of 4.1 years, 160 patients died, and 99 developed ESRD. Higher UUNCR levels at baseline were associated with greater risk of ESRD (P=0.017) but not with all-cause mortality (P=0.38). Compared to 0.0 to <+0.1 of annual change in UUNCR, a decline in UURCR was associated with higher mortality (figure 1). A modest decline in UUNR (i.e., -0.1 to <0 per year) was also associated with ESRD, but a more rapid decline in UUNCR did not show a significant difference in the risk for ESRD. An increase in UUNCR by >0.1/year was not associated with either outcome.

Conclusions A decrease in UUNCR was associated with higher mortality risk in CKD. Further studies are needed to evaluate whether adequate energy intake could alter the association between decreasing UUNCR and outcomes by avoiding protein-energy wasting.

615 PERITONEAL DIALYSIS RELATED OUTCOMES IN OBSE Patients
M Ahmad*. University of Alabama, Irondale, AL

Purpose of Study A wide variation exists in clinical practice for the management of End Stage Renal Disease (ESRD), & some nephrologists do not favor peritoneal dialysis (PD) as a treatment modality in obese patients. This is based on data suggesting a higher rate of peritonitis, pericatheter fluid leaks, metabolic complications, quicker transition to in-center hemodialysis & longer wait for renal transplant among obese patients on PD. There is conflicting data to contradict many of these findings, & some centers continue to experience success with obese patients on peritoneal dialysis.

Methods Used We performed a retrospective analysis of the ESRD patients on PD treated at University of Alabama at Birmingham over a period of 6 years from January 2014 to December 2019 to analyze the effects of obesity on dialysis adequacy, peritonitis rates & modality change. Modality change was defined as a transition from PD to HD for at least 8 weeks. Patient’s with PD catheter removed secondary to renal transplant or death were excluded when analyzing for modality change.

Summary of Results 282 patients underwent PD catheter placement & 327 catheters were placed, 43 patients underwent placement of 2 catheters, & 1 patient had 3 catheters placed during this time. From 282 patients, 158 (56%) were non-obese & 124 (44%) were obese. The Kt/V was available for 238 patients. 117 of 127 (92.12%) non-obese patients were adequate, 96 of 111 (86%) from obese group were adequate (p=0.20). 89 patients had a modality change from PD to HD: 40 of 121 (33%) obese patients & 49 of the 151
(32.5%) non-obese patients (p value 1.0). 118 peritonitis events were recorded over the study period. 33 from 124 (26.6%) obese patients developed 53 peritonitis events of which 14 patients had 2 events & 5 patients had 3 events. 44 from 158 (27.8%) non-obese patients developed 65 peritonitis events of which 15 patients had 2 events & 5 patients had 3 events. On analysis, there was no difference between the two groups in first event of peritonitis (P value 0.89) or recurrent peritonitis (p=0.69).

Conclusions We found no difference between obese & non-obese patients in modality change, dialysis adequacy & peritonitis rates. This is encouraging data, though single center & retrospective, & calls for prospective & multi-center studies to further investigate the potential barriers & possible solutions to improve the utilization of PD in obese patients with ESRD.

### D-DIMMER LEVELS IN END-STAGE RENAL DISEASE (ESRD) PATIENTS DURING COVID-19 PANDEMIC

**1CLAUDIO-GONZALES*, J NAVARRETE, J COBB. Emory University School of Medicine, Atl, GA**

10.1136/jim-2021-SRMC.617

**Purpose of Study** D-dimer has been validated in multiple studies to establish disease severity and mortality risk, but these studies excluded ESRD patients. Pathological observations support the current concept of hypercoagulable status in these critically ill COVID-19 patients, showing microthrombosis in several organs including the lungs and kidneys. As such, D-dimer levels have been used as a trigger to initiate anticoagulation protocols even in the absence of venous thromboembolism. We analyze the association of D-dimer levels with mortality in ESRD patients during the COVID-19 pandemic.

**Methods Used** From March 1 to May 31, 2020 all dialysis patients admitted to Emory University Hospitals and tested for COVID-19 were identified. Socio-demographic information, clinical and laboratory data were obtained from the medical record. Death was defined as an in-hospital death or transfer to hospice for end-of-life care. Patients were followed until discharge or death.

**Summary of Results** 807 ESRD patients were admitted, 69% were tested for COVID-19 infection. 490 patients tested negative and 64 patients receiving renal replacement therapy prior to admission had a positive test (12%) and represent the study population in this report. There were no significant differences in age, gender, race or comorbidities between COVID-19 positive or negative patients. In ESRD COVID-19 positive patients, the median peak D-dimer was 3114 ng/mL (normal upper limit 574 ng/mL). ESRD COVID-19 negative patients admitted during the same period also had elevated D-dimer levels, with a median of 3124 ng/mL (p>0.9). The median peak D-dimer for patients that expired was 24145 ng/mL in ESRD COVID-19 positive and 5875 in ESRD COVID-19 negative patients (p=0.07).

**Conclusions** Mortality was 17% for ESRD COVID-19 infected patients and 8.4% for ESRD without COVID-19 infection (p<0.05). D-dimer were elevated in ESRD patients independently of their COVID-19 status and was equally elevated in patients that survived admission to the hospital regardless of their COVID-19 status. Anticoagulation protocols used in ESRD patients during the treatment of COVID-19 pandemic should take this finding into consideration.

### HYPOKALEMIC PARALYSIS UNMASKING UNDERLYING SJOGREN’S SYNDROME

**NEZHAK*, A LACY, P LAOEVERAT, D BUSCEMI. Texas Tech University Health Sciences Center, Lubbock, TX**

10.1136/jim-2021-SRMC.618

**Case Report** Sjögren syndrome (SS) is a chronic, systemic autoimmune disease characterized by lymphocytic infiltration of the exocrine glands. It can present either alone (primary SS) or in the context of an underlying connective tissue disease (secondary SS).

Herein, we report a case of an underweight 39-year-old female with no previous medical history presented to our facility with a 3-day history of progressive worsening of proximal muscle weakness and fatigue resulting in an overnight non-ambulatory state. Review of symptoms was negative,
including the lack of diarrhea and polyuria. Physical examination was significant for dry mucous membranes and symmetrical proximal grade 2 muscle weakness in all extremities, with intact sensation and normal reflexes. Initial laboratory results revealed a critically low potassium level of 1.6 mEq/L with a normal anion gap metabolic acidosis with a bicarbonate of 13 mEq/L and creatine kinase of 990 U/L. She was admitted to the Critical Care Unit for monitoring and correction of critical potassium levels while a workup for malnutrition, renal and autoimmune etiologies was expanded. A broad differential for severe hypokalemia included renal versus extra-renal losses. Trans-tubular potassium gradient of 15 mEq/L indicated renal cause for potassium loss, along with non-anion gap metabolic acidosis pointed to the diagnosis of distal renal tubular acidosis (RTA) which is usually associated with autoimmune diseases. Further history revealed previous complaints of dry eye and dry mouth. Autoimmune tests were done revealing a positive Anti SS-A Antibody with negative SS-B, DNA, RNP, and Scl 70 antibodies. Therefore, she was diagnosed with Sjögren’s syndrome with distal RTA. She was discharged on potassium citrate and pilocarpine as needed to manage symptoms.

Though primary SS is associated with RTA in about one-third of the cases, it is unusual for hypokalemic paralysis to be the presenting manifestation. Distal RTA results from disordered excretion of H⁺ from the collecting ducts and presents with hyperchloremic hypokalemic metabolic acidosis, hypophosphatemia, and renal stones or nephrocalcinosis. Treatment with potassium citrate allows replenishment of both bicarbonate and potassium.

Discussion Although the patient did not make a complete recovery at discharge, our hopes are that she will continue improving and able to be wean off oxygen as time progresses. During this pandemic, evidence continued to be limited and controversial in regards to treatment of COVID-19 infection. For this reason, we conclude that this case report does provide a data point demonstrating safety in the use of convalescent plasma, remdesivir and dexamethasone in renal transplant patients infected with COVID-19. This case also supports reducing chronic immunosuppression therapies when treating COVID-19 in renal transplant patients. However, we do acknowledge that more research is needed on the topic.

619 THE USE OF CONVALESCENT PLASMA, DEXMETHASONE AND REMDESVIR IN A RENAL TRANSPLANT PATIENT INFECTED WITH COVID-19

S Hannabas*, G Hannabas, C Pena-Hernandez. Texas Tech University Health Sciences Center, Lubbock, TX

Case Report Convalescent plasma has become a therapeutic option during the coronavirus disease 2019 (COVID-19) pandemic. However, evidence remains limited and controversial when considering the use of such therapeutic modality. Furthermore, the studies that do exist do not always show definitive outcomes. In special populations such as renal transplant patients, evidence to support treatment modalities such as convalescent plasma, remdesivir and immunosuppression management is virtually non-existent. For this reason, we present a case of a renal transplant patient who received convalescent plasma, dexamethasone, and remdesivir for treatment of COVID-19, recovered, and was successfully discharged home with limited need for oxygen support.

Case Patient is a 62-year-old female with a past medical history of diabetes mellitus type 2, hypertension, coronary artery disease status-post CABG seven years ago, and hypothyroidism. Patient also underwent deceased donor kidney transplantation (DDKT) approximately 2 years prior to admission. Her serum creatinine was 0.9 mg/dl at baseline before presentation to the hospital for symptoms related to COVID-19 infection. Throughout her 17 day hospitalization the patient did maintain stable kidney function. However, home immunosuppresants were adjusted during her hospitalization. Remdesivir and convalescent plasma was also administered.

Discussion Although the patient did not make a complete recovery at discharge, our hopes are that she will continue improving and able to be wean off oxygen as time progresses. During this pandemic, evidence continued to be limited and controversial in regards to treatment of COVID-19 infection. For this reason, we conclude that this case report does provide a data point demonstrating safety in the use of convalescent plasma, remdesivir and dexamethasone in renal transplant patients infected with COVID-19. This case also supports reducing chronic immunosuppression therapies when treating COVID-19 in renal transplant patients. However, we do acknowledge that more research is needed on the topic.

620 CONGENITAL NEPHROTIC SYNDROME: CONTRIBUTION OF FOXC1, FOXL1, AND GATA3 TO NPHS1 TRANSCRIPTION AND NEPHRIN PRODUCTION

1S Hefley*, 2W Smoyer, 4T Mattoo, 1NH ow ard, 6Joe D’Maggio Children’s Hospital, Hollywood, FL

Purpose of Study Congenital Nephrotic Syndrome (CNS) is a debilitating disease that affects children within the first few months of life. It is characterized by severe proteinuria and loss of kidney function. The flux of large plasma proteins is usually restricted by the presence of a slit diaphragm, which acts as a filtration barrier that limits the movement of proteins into the urine. In other countries, a majority of CNS cases are caused by mutation of the NPHS1 gene, which codes for the nephrin protein, a component of the slit diaphragm. In this study, we wanted to elucidate the most common mutation in North America (NA), as such analysis of genetic mutations has yet to be evaluated in this population. Moreover, we sought to determine the contribution of FOXC1, FOXL1, and GATA3 to NPHS1 transcription and nephrin production.

Methods Used IRB approval was obtained prior to the study. To determine the prevalence of CNS mutations in NA, we performed a retrospective chart review. A survey was administered to members of the Pediatric Nephrology Research Consortium (PNRC) and consisted of 65 questions pertaining to CNS. In vitro studies to determine the impact of FOXC1, FOXL1, and GATA3 on NPHS1 and nephrin expression on healthy primary murine podocytes are currently underway.

Summary of Results Further analysis is needed, but thus far, we have recorded 63 responses recorded. We’ve noted that the average age of diagnosis is 2.6 months of age, with 60.3% of patients being female. A majority (63.4%) of patients with CNS were specifically tested for NPHS1 mutations and our preliminary results indicate that many CNS patients have this mutation. Sadly, of the current responses, 68.25% of patients have undergone bilateral nephrectomy as a result of the CNS.

Conclusions Although our data is preliminary, we have noted that in NA, a majority of CNS cases are in females, suggesting a potential sex difference in prevalence. Furthermore, our results show that NPHS1 mutations are prevalent in NA CNS.
ABSTRACT WITHDRAWN

622 URINARY SEDIMENT MICROSCOPY IN COVID-19-ASSOCIATED KIDNEY INJURY


10.1136/jim-2021-SRMC.622

Purpose of Study Acute kidney injury (AKI) is a complication of COVID-19 that is not fully understood. Microscopic examination of the urinary sediment (MicrExUrSed) is a valuable diagnostic tool in AKI. Thus far, there has been scarcity of data about MicrExUrSed in COVID-19-associated AKI (CoV-AKI). We hypothesized that MicrExUrSed provides diagnostic clues in CoV-AKI.

Methods Used We conducted a prospective observational study in patients seen for inpatient nephrology consultation with KDIGO AKI stage > 1 and COVID-19 over a 1-month period. Urine specimens were collected with personal protective equipment to perform MicrExUrSed. Slides were assessed for presence of white blood cells (WBC) [≥ 2+ dipstick, ≥ 6 per low power field (LPF)], red blood cells (RBC) [≥ 2+ dipstick, ≥ 8 per LPF], acanthocytes, granular casts (GC), renal tubular epithelial cell casts (RTECC) and waxy casts (WxC). Slides were assigned to a category of acute tubular injury (ATI) based on either a Perazella cast score ≥ 2 or a Chawla cast score ≥ 3.

Summary of Results Among 161 cases of AKI, MicrExUrSed was performed in 20 (12.4%). Anuria and contact precautions were barriers to obtain specimens. GC were found in 17 (85%) of which 16 (80%) had ‘muddy’ brown GC (MBGC). A median 5 MBGC per LPF (1–20) were found in a median 40% (10–95%) of LPFs. WxC were found in 10 (50%) cases with a median 2 (1–5) per LPF, all of whom had MBGC also present. RTECC were found in 3 (15%) cases with a median 1 (1–4) per LPF. Altogether, ATI score was assigned to 17 (85%) patients, of which 12 (60%) had AKI either after a hemodynamic/ischemic insult (9) or after a toxic insult (3) (rhabdomyolysis, vancomycin, contrast) and 3 (15%) had biopsy-proven ATI along with collapsing glomerulopathy; for a total of 15 (75%) patients with either clinical or histological evidence on ATI matching the MicrExUrSed findings. Ten (50%) and 5 (25%) had WBCs and RBCs, respectively. Acanthocytes were found in 1 (5%) patient with presumptive proliferative endocapillary glomerulonephritis.

Conclusions MicrExUrSed in most patients with CoV-AKI showed overt evidence of ATI with an abundance of MBGC and WxC, including in cases of coexisting glomerulopathy. Pyuria was observed in half. The diagnostic utility of MicrExUrSed in CoV-AKI was comparable to that demonstrated in other forms of AKI.

623 ABNORMAL POSITRON EMISSION TOMOGRAPHY SCAN IN CHILD WITH KIDNEY TRANSPLANT

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10.1136/jim-2021-SRMC.623

Case Report Nephrotic syndrome is characterized by heavy proteinuria, hypoalbuminemia, and edema. Ascites, and pleural effusions are frequently seen. Pericardial effusions are rarely reported.

A 14 yo female with history of end stage renal disease secondary to multi-drug resistant focal segmental glomerulosclerosis (FSGS) who underwent living related donor renal transplant in 2018 developed worsening kidney function, anemia and thrombocytopenia. She endorsed worsening of chronic leg edema and facial swelling. She underwent a positron emission tomography (PET) scan to rule out post-transplant lymphoproliferative disease. A large pericardial effusion was incidentally noted on PET. She had no complaints of chest pain, shortness of breath or palpitations. Cardiology was consulted and she did not require pericardiocentesis. She was started on bumetanide with albumin effusions to help with diuresis. She was closely monitored clinically and with routine
Collapsing glomerulopathy is an aggressive variant of focal nodular glomerulosclerosis that can cause acute renal injury after viral infections or other insults. It has been described in association with significant glomerular proteinuria and elevated inflammatory markers. Perinuclear anti-neutrophilic cytoplasmic antibody (p-ANCA) titer was negative as were renal ultrasound and PCR assays for Epstein-Barr virus, Cytomegalovirus, and BK virus. Due to mild clinical deterioration with development of minimal oxygen requirement, mycophenolate was discontinued and high-dose corticosteroid pulse initiated, after which the patient defervesced without further respiratory compromise, though kidney function remained impaired. Renal biopsy revealed collapsing focal segmental glomerulosclerosis and chronic antibody mediated rejection. Over the course of hospitalization his graft function improved with reduction in proteinuria and inflammatory markers. One week after diagnosis, graft function was near his baseline.

Collapsing glomerulopathy is an aggressive variant of focal segmental glomerulosclerosis that can cause acute renal injury after viral infections or other insults. It has been described in association with COVID-19 infection in both native and grafted kidneys. In this case, the significant deterioration of graft function and increased glomerular proteinuria with collapsing glomerulopathy on biopsy while actively infected with SARS-CoV-2 suggests a possible causal role for the novel coronavirus in the pathophysiology of this patient’s AKI. This case

Summary of Results Of the 249 patients admitted to our institution during the month of March who tested positive for SARS-CoV-2 via RT-PCR nasopharyngeal swab, 118 (47%) patients developed AKI. The median age of these patients was 66 years. Of the patients who developed AKI, 45 (38%) had stage I AKI and 73 (62%) had stage II/III AKI. 39 (33%) of patients who developed AKI required dialysis. A number of clinical variables were predictive for development of AKI, including patient’s age and their serum creatinine at the time of admission.

Conclusions At our institution, 47% of patient admitted with COVID-19 developed AKI. These patients were more likely to be stepped up to the ICU, require mechanical ventilation, and overall experienced worse clinical outcomes in comparison to those patient who did not develop AKI. Further studies are required to assess the long-effects of AKI on patients with COVID-19.

Purpose of Study The SARS-COV2 virus targets the ACE2 receptor, an enzyme abundant in lung and renal epithelium. While initially the medical community’s focus was on the respiratory aspects of the virus, renal manifestations became increasingly evident. Institutions around the world began reporting high rates of acute kidney injury (AKI) among patients hospitalised with COVID-19. We sought to investigate whether those patients who developed AKI while admitted to our institution with COVID-19 experienced poorer outcomes, and whether there were clinical predictors of AKI among COVID-positive patients. We present the clinical characteristics and outcomes of patients with COVID-19 who developed AKI upon admission to a single, tertiary care center in New Orleans, LA.

Methods Used A retrospective review was conducted with patients admitted to a tertiary care center in New Orleans, LA with positive SARS-CoV-2 testing from March 9th to March 31st, 2020, who developed AKI. AKI was defined using the Kidney Disease Improve Global Outcomes (KDIGO) criteria. For those with positive SARS-CoV-2-tests, various data was abstracted via EPIC into a REDCap database.

Abstract 623 Figure 1
echocardiograms for signs of heart failure. Heart function remained within normal limits and pericardial effusion regressed.

Concurrently, a kidney biopsy was performed that revealed thrombotic microangiopathy (TMA). Tacrolimus was discontinued and she started eculizumab infusions for treatment of TMA and had initial improvement in systemic disease as shown by resolved anemia, thrombocytopenia and down trending lactate dehydrogenase, blood urea nitrogen and creatinine.

Pericardial effusion is rare in children with nephrotic syndrome. Most cases reported have been associated with an underlying inflammatory condition such as systemic lupus erythematosus. The finding of TMA in our patient may have contributed to her pericardial effusion.

AN ANALYSIS OF PATIENTS WHO DEVELOPED ACUTE KIDNEY INJURY UPON ADMISSION TO A TERTIARY CARE CENTER DURING THE FIRST MONTH OF THE ACCELERATION PHASE OF COVID-19 IN NEW ORLEANS, LA

S LaPorte*, AH Feibus, A Cruse, MV Najayan, A Chapple, V Silver, EA Aguilar, F Yazdi, RB Vareldzis, S Barry, E Reisin, A Shepard, J Bedford, M Salman, A Richard, M Clement, SA Morse. Louisiana State University Health Sciences Center, New Orleans, LA

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Case Report A 16 year old male with history of end-stage renal disease due to microscopic polyangiitis who received a living-related donor transplant in 2014, on maintenance immunosuppression with tacrolimus, mycophenolate, and prednisone, was admitted for treatment of biopsy-proven acute antibody-mediated rejection. On admission, he was found to be febrile with respiratory PCR positive for SARS-CoV-2 in association with acute kidney injury and leukopenia. Treatment of acute rejection was postponed due to acute infection. Acute kidney injury was initially treated with aggressive intravenous fluids with transient improvement. Overall, the graft function continued to worsen in association with significant glomerular proteinuria and elevated inflammatory markers. Perinuclear anti-neutrophilic cytoplasmic antibody (p-ANCA) titer was negative as were renal ultrasound and PCR assays for Epstein-Barr virus, Cytomegalovirus, and BK virus. Due to mild clinical deterioration with development of minimal oxygen requirement, mycophenolate was discontinued and high-dose corticosteroid pulse initiated, after which the patient defervesced without further respiratory compromise, though kidney function remained impaired. Renal biopsy revealed collapsing focal segmental glomerulosclerosis and chronic antibody mediated rejection. Over the course of hospitalization his graft function improved with reduction in proteinuria and inflammatory markers. One week after diagnosis, graft function was near his baseline.

Collapsing glomerulopathy is an aggressive variant of focal segmental glomerulosclerosis that can cause acute renal injury after viral infections or other insults. It has been described in association with COVID-19 infection in both native and grafted kidneys. In this case, the significant deterioration of graft function and increased glomerular proteinuria with collapsing glomerulopathy on biopsy while actively infected with SARS-CoV-2 suggests a possible causal role for the novel coronavirus in the pathophysiology of this patient’s AKI. This case
seeks to be an additional source of information to help further understand the impacts of COVID-19 in pediatric patients.

**Case Report**

Hyperphosphatemia is a well described complication of end stage renal disease (ESRD), associated with vascular calcifications and increased cardiovascular morbidity and mortality. Current guidelines recommend treatment of hyperphosphatemia with dietary phosphate restriction and administration of phosphate binders. Standard dietary education typically does not address non-food items. Presented here is a case of an ESRD patient with persistent hyperphosphatemia despite phosphate binder adherence from unrecognized pica consumption.

This is a 27 year old Hispanic male immigrant with ESRD since 2018. He dialyzes using a high flux dialyzer and a standard dialysate bath. His medications during dialysis are epoetin alfa, iron sucrose, and doxercalciferol. His outpatient medications are lisinopril and ferric citrate with meals. He receives weekly education on dietary phosphorus restriction and phosphate binder compliance. He is fully compliant with the hemodialysis treatment and with phosphate binders as noted by his reported dark colored stools. Despite his compliance with phosphate binders, he has persistent hyperphosphatemia ranging 7–9 mg/dL. The goal maximum phosphorus level per guidelines is 5.5 mg/dL. After extensive interviewing, he admits to consuming dirt and rocks from his backyard in Alabama for the past two years. So far, counseling on the dangers of pica has been an ineffective treatment strategy for him.

Soil tests from Auburn University show that 40 percent of Alabama garden soils have very high or excessive levels of phosphorus. This patient consumed garden soil in Alabama. The reasons compelling him to consume non-food items remains unclear. It is well known that pica occurs in the setting of anemia. However, this patient’s anemia is well treated with hemoglobin 10–11 gram/dL and iron stores 60–70 mcg/dL, iron saturation 25–35%, and ferritin 400–500 ng/mL, which are within the limits per international guidelines. He also consistently meets hemodialysis adequacy standards with standard pooled Kt/V consistently greater than 1.2. He has no cognitive deficits.

There are reports that pica is common among dialysis patients. However, few studies describe it as a cause of hyperphosphatemia. Further studies are needed to determine if dialysis patients are uniquely susceptible to pica and how to effectively treat it.

**Case Report**

Novel coronavirus infection presents a substantial global burden, the currently approved CDC treatment protocol includes high dose of glucocorticoid for up to 10 days. Given the protracted illness, it may be extended beyond the proposed duration. We report an atypical adrenal insufficiency in the context of this therapeutic regimen.

Case 69 yo male with hypertension, diabetes mellitus type 2, dyslipidemia, obesity, hypothyroidism, CAD presented with cough, fever, dyspnea, and wheezing. His HR was 140/minute, but vitals & examinations were unremarkable. He had normal leukocyte count, CRP 2.7 mg/L, BNP 856 ng/L. Procalcitonin, lactic acid, troponin and initial chest radiographs were normal. However, EKG showed A-fib and COVID PCR test was positive.

He completed ten days of azithromycin, remdesivir and dexamethasone 8 mg daily. However, oxygen requirements continued to remain at 35 L on vapoform with FiO2 50–60%. Hence, decision was made to continue dexamethasone until there is a reduction in the oxygen requirements. On day 20, patient developed new hyponatremia of 130 mEq/dL, followed by hyperkalemia of 6.3 mg/dL, bicarbonate of 28 mEq/L and normal renal function, urine output, blood pressure. Heparin flushes used for PICC line were discontinued, yet potassium stayed elevated. Sodium polystyrene 30 gm were administered with daily fludrocortisone 0.2 mg for presumed hypoadrenalism. The hyperkalemia and hyponatremia were corrected and remained normal with gradual withdrawal of dexamethasone and fludrocortisone. Serum cortisol level was available later read as 0.6 µg/dl and serum aldosterone of less than 2 ng/dl, while plasma renin levels were relatively normal at 0.56 mg/ml/hr.

The protracted use of dexamethasone caused metabolic alkalosis mitigating the expected metabolic acidosis from hypoadrenalism. However, it failed to alleviate the effects of low cortisol with aldosterone on sodium and potassium due to lack of mineralocorticoid activity in dexamethasone. We cannot rule out direct coronavirus adrenal invasion in the absence of ACTH levels. Physicians should be aware that protracted dexamethasone therapy in COVID-19 may be associated with atypical presentation of adrenal insufficiency with severe hyperkalemia, hyponatremia and metabolic alkalosis!
were not on ACEI/ARB prior to coronary angiography, and 116 cases were included into the study.

From electronic medical records, we collected information, on gender, age, cardiac disorders, comorbidities, diabetes mellitus, hypertension, proteinuria, amount of proteinuria, CKD stage 4–5, ACEI medication, ACEI discontinuation, ARB medication, ARB discontinuation, non-steroidal anti-inflammatory drugs (NSAIDs) use, date of coronary angiography, systolic blood pressure (SBP) drop below 90 mmHg during coronary angiography, serum creatinine (SCr)/eGFR before coronary angiography, SCr/eGFR at day 1 after coronary angiography, SCr/eGFR at day 2 after coronary angiography, SCr/eGFR at day 3 after coronary angiography, SCr/eGFR at 1 month after coronary angiography, length of hospital stay, rehospitalization, re-coronary angiography, cardiovascular complication, and death from any causes.

**Summary of Results** The average age of patients was 65.23 ± 12.28 years. There were 89 men (76.75%) and 27 women (23.28%). Based on the criteria of increasing in SCr by ≥ 0.3 mg/dl within 48 hours, 19 cases (16.38%) had AKI. Based on the criteria of increasing in SCr to ≥ 1.5 times baseline, which has occurred within the prior 7 days, AKI was diagnosed in 2 cases (1.72%) at day 1, 4 cases (3.45%) at day 2, and 7 cases (6.03%) at day 3 after coronary angiography. Urine volume was not collected after coronary angiography.

**Conclusions** There was no definite evidence to indicate that coronary angiography causes AKI in CKD stage 2–5 patients who took ACEI/ARB.

**Differences in Clinical Characteristics of Calciphylaxis (Calcific Uremic Arteriopathy) Patients Depending on Warfarin Status**

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**Purpose of Study** Calcific Uremic Arteriopathy (CUA) which is commonly called calciphylaxis is a rare and serious condition characterized by painful skin ulcerations due to ischemia with necrosis of the skin. The disorder carries a mortality rate > 50% in the first year, and death is often due to recurrent infections. Risk factors for calciphylaxis includes end-stage renal disease (ESRD), a history of diabetes, obesity, female gender, Caucasian race, and the use of medications such as warfarin. We presented the clinical characteristics of CUA patients on warfarin and those not on it.

**Methods Used** Retrospective chart review of CUA patients from 2001–2019 in our single center academic hospital. We divided the patients into 2 cohorts- CUA patients on warfarin and those not on it. We compared the baseline characteristics between these 2 groups which included age, race, gender, cardiac disorders, comorbidities, diabetes, hypertension, proteinuria, amount of proteinuria, CKD stage 4–5, ACEI medication, ACEI discontinuation, ARB medication, ARB discontinuation, non-steroidal anti-inflammatory drugs (NSAIDs) use, date of coronary angiography, systolic blood pressure (SBP) drop below 90 mmHg during coronary angiography, serum creatinine (SCr)/eGFR before coronary angiography, SCr/eGFR at day 1 after coronary angiography, SCr/eGFR at day 2 after coronary angiography, SCr/eGFR at day 3 after coronary angiography, length of hospital stay, rehospitalization, re-coronary angiography, cardiovascular complication, and death from any causes.

**Summary of Results** The average age of patients was 65.23 ± 12.28 years. There were 89 men (76.75%) and 27 women (23.28%). Based on the criteria of increasing in SCr by ≥ 0.3 mg/dl within 48 hours, 19 cases (16.38%) had AKI. Based on the criteria of increasing in SCr to ≥ 1.5 times baseline, which has occurred within the prior 7 days, AKI was diagnosed in 2 cases (1.72%) at day 1, 4 cases (3.45%) at day 2, and 7 cases (6.03%) at day 3 after coronary angiography. Urine volume was not collected after coronary angiography.

**Conclusions** There was no definite evidence to indicate that coronary angiography causes AKI in CKD stage 2–5 patients who took ACEI/ARB.

**Suboptimal Serologic and Clinical Remission on Supportive Therapy in Phospholipase A2 Receptor Membranous Nephropathy**

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**Purpose of Study** A traditional notion is that one third of patients with primary membranous nephropathy (MN) are expected to achieve spontaneous clinical remission without immunosuppressive therapy (IST). Thus, Kidney Disease Improving Global Outcomes (KDIGO) recommends at least 6 months of supportive therapy (SUPPT) without IST in patients with primary MN at low risk for developing end-stage renal disease. Recently, phospholipase A2 receptor (anti-PLA2R) antibody titers have been added to decision-making algorithms. Our objective was to examine the rates of serologic and clinical remission in patients with PLA2R-MN managed by either SUPPT or IST.

**Methods Used** We retrospectively reviewed records of adult patients diagnosed with PLA2R-MN in native kidneys over the last 5 years at our medical center. Trajectories of anti-PLA2R titers were extracted. Rates of partial remission (PR) (reduction in urine protein-creatinine ratio (UPCR) to 0.5 to 3.0 g/g) and complete remission (CR) (UPCR < 0.5 g/g) were assessed at varying time points within a 24-month interval and compared between patients managed by either SUPPT or IST.

**Summary of Results** We included 25 patients, median age 59 years, 44% women, 60% black. Positive PLA2R antigen in kidney biopsy was verified in 18/27 (72%). 8 patients were managed by SUPPT and 17 by IST. Median serum creatinine at time of biopsy was 1.0 mg/dL for both groups (p=0.58), whereas median UPCR were 5.6 g/g in the SUPPT arm and 10.5 g/g in IST (p=0.004). Median anti-PLA2R titer at baseline were 49 (17–76) and 258 (35 – >1500) RU/mL for the SUPPT and IST arms, respectively, p=0.0058. By the 18-month time mark, 9/17 (53%) in the IST group achieved serologic remission (anti-PLA2R titer <10) vs 0/6 (0%) in SUPPT arm (p=0.02) (missing follow-up titer in 2 SUPPT patients). At 24 months, CR and PR was achieved in 1/8 (12.5%) and 3/8 (37.5%) of patients under SUPPT and in 3/17 (17.6%) and 8/17 (47%) of those under IST (p=0.75 and p=0.66, respectively).

**Conclusions** Despite baseline characteristics denoting less aggressive disease, patients with PLA2R-MN under SUPPT therapy did not achieve greater rates of clinical remission and exhibited a lower rate of serological remission. Current
algorithms dictating choice of SUPPT as initial treatment in low-risk PLA2R-MN should be revisited.

631 CHARACTERISTICS OF IGA NEPHROPATHY IN AFRICAN AMERICAN KIDNEY TRANSPLANT RECIPIENTS

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Purpose of Study Immunoglobulin A nephropathy (IgAN) is the most common primary glomerulonephritis. Up to 40% of patients progress to end-stage kidney disease (ESKD) within 20 yrs of diagnosis. Racial distribution varies, with the highest incidence in East Asians, then Caucasians, and rare in sub-Saharan Africans. In African Americans (AA), incidence is low, but likely underestimated, and with worse outcomes. IgAN recurs in ~50% allografts at 10 yrs with ~5% subsequently progressing to ESKD. Data on IgAN recurrence in AA is limited. We examined the characteristics of native and recurrent disease in AA IgAN transplant patients.

Methods Used We reviewed records of the 28 AA patients with IgAN who underwent kidney transplantation between 12/1985 and 02/2019 at the University of Alabama at Birmingham. Demographics, laboratory and pathology data at the time of diagnosis, ESKD, and post-transplant were compiled.

Summary of Results Male female gender ratio was 1:1. Mean age at diagnosis was 36 yrs (12–65). Mean interval from native-kidney biopsy to ESKD in 20 patients with data was 3.5 yrs. Mean interval from ESKD to transplantation was 3.7 yrs in 27 patients with data. Eighty patients had data on recurrence in the first kidney allograft: Four patients (22%) with mean follow-up of 12.2 yrs had recurrence with mean interval from transplantation to first allograft biopsy of 2,849 days (962–4,488). All 4 patients were on corticosteroids and mycophenolate mofetil. For the 11 of 14 patients with no recurrence in the first renal allograft, median interval from transplantation to first allograft biopsy was 2.4 days (0–968). Eight patients were on corticosteroids and 5 on mycophenolate mofetil. Mean follow-up duration after transplant was 10.7 yrs for 26 patients with data.

Conclusions Native-kidney disease in IgAN AA transplant recipients affected genders equally, in contrast to the male predominance seen in Caucasians. Interval from diagnosis to ESKD was unusually short compared with that of Caucasian IgAN patients. IgAN recurrence in AA was less frequent than reported for Caucasians. Larger studies are necessary to confirm our findings.

632 REFRACTORINESS OF HYPERKALEMIA AND HYPERPHOSPHATEMIA IN DIALYSIS-DEPENDENT ACUTE KIDNEY INJURY ASSOC. WITH COVID-19

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Purpose of Study There have been anecdotal accounts of an unusual incidence of persistent hyperkalemia (hyperK) and hyperphosphatemia (hyperP) in patients with COVID-19 and acute kidney injury (AKI) (CoV-AKI) despite renal replacement therapy (RRT). However, an observation bias could not be discarded.

Methods Used Among 161 patients with CoV-AKI, we selected those who underwent RRT by sustained low efficiency dialysis (SLED) for ≥2 days (n=64). A database of patients with AKI on SLED who underwent urinary sediment microscopy (Sedi-AKI cohort, 2017–2019, n=60) served as control (non-CoV-AKI). We examined the rate of hyperK [serum potassium (sK) ≥5.5 mEq/L], severe hyperK [sK ≥ 6.5 mEq/L], hyperP [serum phosphate (sP) ≥ 4.5 mg/dL], moderate hyperP [sP ≥ 7.0–10.0 mg/dL] and severe hyperP [sP ≥ 10.0 mg/dL] as% SLED-days with an event.

Summary of Results Median age were similar: 60 (39–84) and 58 (22–88) years for CoV-AKI and non-CoV-AKI, respectively. Black race (77% vs. 30%; p<0.0001) and male sex (78% vs. 61%; p=0.04) were more common in CoV-AKI. Ischemic ATI was the presumed cause of AKI in 85% and 82% of the CoV-AKI and non-CoV-AKI, respectively. Along the duration of SLED, the incidence of hyperK was greater in CoV-AKI [mean 19 ± 2% vs. 14 ± 3% SLED-days, p=0.002]. The proportion of patients with ≥1 event of severe hyperK was greater in CoV-AKI [33% vs. 7%, p=0.0004]. The incidence of hyperP were similar between groups [mean 56 ± 4% vs. 53 ± 5% SLED-days, p=0.49]. However, the proportion of patients with ≥2 events of moderate and severe hyperP were greater in CoV-AKI [86% vs. 60% (p<0.001) and 50% vs. 18%, (p=0.0002)]. In CoV-AKI, sK and sP correlated with lactate dehydrogenase (LDH) [R=0.305 (p=0.044) and R=0.307 (p=0.043), respectively] but not with creatine kinase; and hyperP events correlated with shorter SLED runs (hours/run) (R=-0.268, p=0.053).

Conclusions HyperK and hyperP refractory to RRT (by SLED) were more frequent in CoV-AKI compared to other forms of AKI in the pre-COVID-19 era. Because of the correlation of sK and sP with higher LDH and shorter SLED runs, intracellular ion release from cell injury due to cytokine ‘storm’ and RRT interruptions may play a role.

633 A RED-RASH HERRING

A Richard*, E Reisin, S Barry, A Shepard, EA Aguilar, SA Morse. LSUHSC-New Orleans, New Orleans, LA

Case Report Staphylococcal Associated Glomerulonephritis is an uncommon subvariant of classical post infectious glomerulonephritis that is characteristically not associated with hypocomplementemia. Staphylococcal Associated Glomerulonephritis is associated with a guarded prognosis in adults who require renal replacement therapy for management of renal failure. Case A 51-year-old incarcerated man with past medical history of hypertension, protein C deficiency on anticoagulation with coumadin, and peripheral vascular disease with venous stasis ulcers presented to the emergency department for evaluation of 5 days of dark red rash on his hands and feet. Per patient, he had recently completed outpatient treatment for Methicillin-resistant staphylococcus aureus superinfection of his venous stasis ulcers with improvement in wounds. Vitals were stable at time of presentation. Physical exam was notable anasarca and palpable purpura of bilateral lower extremities and hands. Laboratory assessment was significant for acute kidney injury with BUN of 89 mg/dL, Creatinine of 2.18 mg/dL, platelet
A CASE OF DIZZYING CONCENTRATION

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10.1136/jim-2021-SRMC.634

Case Report

Dialysis disequilibrium syndrome (DDS) is a rare but life-threatening condition that occurs soon after initiation of renal replacement therapy (RRT). Patients at high risk for DDS include patients new to dialysis, those who have an extremely high blood urea nitrogen (BUN) level, or those with active neurologic conditions at the time of dialysis.

Case

A 57-year-old man with lower extremity paraplegia, neurogenic bladder managed with suprapubic catheter, and chronic decubitus wounds presented to the ED for evaluation of lethargy and confusion. Vitals featured blood pressure of 88/45 mmHg, pulse of 93 BPM, temperature of 94.3°F, respiratory rate of 13BPM, with O2 saturation of 100%. Physical exam was notable for dry mucous membranes, skin tenting on dorsum of hands and scalp, suprapubic catheter with 60 mL of cloudy, pink urine, and stage IV right hip decubitus wound. Labs included WBC 42.5K/uL, Na 141 mEq/L, K 8 mEq/L, Cl 96 mEq/L, CO2 9 mEq/L, BUN 297 mg/dL, Creatinine 11.93 mg/dL, and Lactate 2.3 mmol/L. Urinalysis was notable for specific gravity >1.030, >100 cells/hpf WBC, and +Leukocyte esterase. Patient was hospitalized and administered two liters of Lactated Ringers, antibiotics, and vasopressor support with only mild improvement in clinical assessment. Patient remained oliguric and hyperkalemic after initial management. Hemodialysis was initiated for two hours with low blood flow rate. BUN post hemodialysis decreased to 146 mg/dL. Patient was electively intubated for airway protection due to worsening mental status post hemodialysis. Head CT was notable for diffuse cerebral edema, and hypertonic saline was started for concern of DDS as etiology to encephalopathy. The patient’s mental status improved 48 hours later with hypertonic saline and he was eventually discharged to in-center hemodialysis after clinical improvement.

Discussion

Mild symptoms of DDS are self-limited in most patients, however, severe manifestations can include seizures, stupor, coma, and death. The symptoms of DDS are caused by cerebral edema, with reversed osmotic shift of water intracellularly due to elevated intracellular urea as the proposed mechanism of injury. Careful consideration of the hemodialysis prescription is the best way to mitigate the risk of DDS in patients requiring RRT.

ADRENAL INSUFFICIENCY IN A SICKLE CELL PATIENT

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Case Report

A 32 year old AA male, with a medical history of Hgb S sickle cell disease, seizure disorder, homelessness, drug abuse, depression, bilateral hip, knee and wrist pain. Pt reported Percocet did not help. Examination revealed tachycardia and tenderness to palpation in knees and wrist. Vitals within normal limits, serum Na 135 mmol/L, K 7.2 mmol/L. CPK was normal. EKG showed peaked T waves.

He was admitted for sickle cell pain crisis and hyperkalemia. K was shifted medically multiple times and nephrology was consulted. A trialysis catheter was placed. He underwent hemodialysis for refractory hyperkalemia with EKG changes. K improved afterwards. Hyperkalemic workup revealed urinary K 27 mEq/L urinary Na 109 mEq/L, and a cortisol level of <1 μg/dL. The hypercortisolism prompted an adrenal insufficiency and cosyntropin stimulation test yielded a cortisol level of 18.7 μg/dL however it was not drawn at appropriate time. Subsequent ACTH level was 14 pg/mL. Aldosterone: 11.6 ng/dL, renin: 6.6 ng/dL, and aldosterone/renin ratio: 11.6 ng/dL.

He was started on hydrocortisone and discharged and did not require any more dialysis. His serum K remained stable.

Discussion

Sickle cell disease (SCD) is an autosomal recessive disorder caused by amino acid substitution of valine with glutamine at position 6 of the beta subunit. Adrenal insufficiency (AI) occurs in patients with SCD and leads to electrolyte abnormalities, particularly hyponatremia and hyperkalemia, as well as hypotension among other findings. Sickle cell crisis can cause vasocclusive ischemia; it is proposed that the relative ischemia of both the adrenal and pituitary glands can cause endocrinopathies such as AI. Also, AI in sickle cell disease include Fe overload from red blood cell transfusions causing organ dysfunction. Additionally, chronic opiate abuse can inhibit the release of corticotropin-releasing hormone from the hypothalamus, leading to decreased cortisol and AI. Our patient had AI and subsequent inappropriate normal levels of ACTH suggesting a secondary AI. This shows the importance of a differential diagnosis in a SCD patient and findings that could suggest an AI.

A CASE OF ACUTE PARALYSIS

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10.1136/jim-2021-SRMC.636

Case presentation

A 14-year-old male presents with severe upper and lower extremity paralysis that began after football practice. This has happened before, but previously occurred after eating carbohydrate-rich food. Labs revealed hypokalemia...
of 1.9 mmol/L, CPK 3000 u/L, and prolonged QTc of 646 ms.

He received 1.5x mIVF until CPK normalized. He required several KCl infusions until he achieved normokalemia. His QTc normalized with correction of hypokalemia. His paralysis instantly resolved once his potassium normalized.

He had recently been started on acetazolamide for his familial hypokalemic periodic paralysis (FHPP). He was instructed to continue this medication and avoid strenuous exercise to prevent further episodes of hypokalemia and paralysis.

**Discussion** Familial hypokalemic periodic paralysis is a rare, autosomal dominant disorder of skeletal muscle calcium or sodium channels. Triggers include rest after strenuous exercise, carbohydat-rich meals, sodium-rich meals, rapid temperature changes, and stress. Weakness can be mild or severe and may include the diaphragm. Attacks can last for days until hypokalemia is treated. Recovery is usually sudden.

Diagnosis is made with family history and clinical picture of hypokalemia with weakness. Long exercise EMG can also be diagnostic. Differential diagnosis includes conversion disorder since the paralysis does not typically match spinal root or nerve distributions.

The mainstays of prevention include the avoidance of carbohydate-rich meals and strenuous exercise. Carbonic anhydrase inhibitors or spironolactone may help with symptoms. Paralysis may be treated with rapid oral or IV K+ repletion. Some patients require daily K+ supplementation.

Nonadherence to treatment and avoidance of disease triggers can lead to chronic mild weakness called an ‘abortive attack’ or permanent damage to muscles. Lifespan is generally unaffected unless hypokalemia is severe enough to cause diaphragm paralysis or arrhythmias.

**637 ASSOCIATION OF MYOCARDIAL INFARCTION WITH PSORIASIS IN END-STAGE RENAL DISEASE (ESRD) PATIENTS**

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**Purpose of Study** Previous research in non-dialysis patients suggests that the inflammatory skin disease psoriasis is associated with an increased risk of severe vascular events, such as myocardial infarction (MI). Thus, psoriasis may represent a significant risk factor for developing MI in ESRD patients.

**Methods Used** We queried the United States Renal Data System for all ESRD patients who started dialysis between 2004 and 2015. ICD-9 and ICD-10 codes were used to identify patients with a bone scan negative for osseous lesions. Renal ultrasound showed normal size kidneys; urinalysis with pH of 6.0, 2+ glucose and 2+ proteinuria. Kidney biopsy revealed a blood urea nitrogen and serum creatinine (SCr) of 111 mg/dL/32.6 mg/dL, respectively, sodium 139 mEq/L, potassium 3.4 mEq/L, bicarbonate 21 mEq/L, calcium 10.6 mg/dL, phosphorus 10.8 mg/dL, uric acid 16 mg/dL, and Hemoglobin of 6.2 g/dL. He was stabilized with fluid resuscitation and blood transfusion though his SCr reached a nadir of 23 mg/dL requiring initiation of dialysis. Work up revealed β2-microglobulin of 63.5 mg/L, Kappa light chains 15,890 mg/L, Lambda LC 40 mg/L, and a ratio of 389; M spike 1.5 g/dL, and 2.5 grams of proteinuria; normal complements, negative ANA/ANCA, hepatitis panel, RPR/HIV, normal CPK, and a bone scan negative for osseous lesions. Renal ultrasound showed normal size kidneys; urinalysis with pH of 6.0, 2+ glucose and 2+ proteinuria. Kidney biopsy revealed light chain proximal tubulopathy, crystal-storing histiocytosis. Bone marrow biopsy showed 60% kappa restricted plasma cells. He received plasmapheresis and induction chemotherapy with bortezomib, cyclophosphamide, and dexamethasone. He continues to have a good urine output but remains dialysis dependent. He is currently being evaluated for an autologous bone marrow transplant.

**Conclusions** Contrary to prior research in the general population, in the ESRD population psoriasis was not associated with an increased risk of MI after controlling for various demographic and clinical parameters. Our finding emphasizes the importance of controlling for a wide variety of confounders in population studies examining associations between diseases and risk factors.

**638 MYELOMA KIDNEY AND KAPPA-LIGHT CHAIN CRYSTAL-STORING HISTIOCYTOSIS**

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**Case Report** Kidney involvement is present in half of multiple myeloma patients. Overproduction of toxic free light chains can result in intratubular cast formation, accumulation in the proximal tubules with tubular dysfunction and sometimes associated Fanconi’s syndrome. Yet, the accumulation of free light chains with crystalline formation in histiocytes is a rare complication of multiple myeloma. We present a case of a veteran with κ light chain multiple myeloma and myeloma cast nephropathy, light chain proximal tubulopathy, and crystal-storing histiocytosis.

A 40-year-old African American man with no past medical history presented with nausea and vomiting of 6 weeks duration. Vitals on presentation were unremarkable, except heart rate of 123. Physical examination was notable for tachycardia, pale conjunctiva and dry mucus membranes. Chemistry revealed a blood urea nitrogen and serum creatinine (Scr) of 111 mg/dL/32.6 mg/dL, respectively, sodium 139 mEq/L, potassium 3.4 mEq/L, bicarbonate 21 mEq/L, calcium 10.6 mg/dL, phosphorus 10.8 mg/dL, uric acid 16 mg/dL, and Hemoglobin of 6.2 g/dL. He was stabilized with fluid resuscitation and blood transfusion though his Scr reached a nadir of 23 mg/dL requiring initiation of dialysis. Work up revealed β2-microglobulin of 63.5 mg/L, Kappa light chains 15,890 mg/L, Lambda LC 40 mg/L, and a ratio of 389; M spike 1.5 g/dL, and 2.5 grams of proteinuria; normal complements, negative ANA/ANCA, hepatitis panel, RPR/HIV, normal CPK, and a bone scan negative for osseous lesions. Renal ultrasound showed normal size kidneys; urinalysis with pH of 6.0, 2+ glucose and 2+ proteinuria. Kidney biopsy revealed light chain proximal tubulopathy, crystal-storing histiocytosis. Bone marrow biopsy showed 60% kappa restricted plasma cells. He received plasmapheresis and induction chemotherapy with bortezomib, cyclophosphamide, and dexamethasone. He continues to have a good urine output but remains dialysis dependent. He is currently being evaluated for an autologous bone marrow transplant.

This case represents one of only a few reported cases of multiple myeloma with renal involvement consisting of myeloma cast nephropathy, proximal tubulopathy, and associated crystal-storing histiocytosis.
639 PREDOMINANCE OF MITOCHONDRIAL PROTEIN COMPOSITION IN URINARY SEDIMENT ENRICHED WITH MUDDY BROWN GRANULAR CASTS DURING ACUTE TUBULAR NECROSIS


Purpose of Study Detection of copious ‘muddy’ brown granular casts (MBGCs) during microscopic examination of the urinary sediment (MicrExUrSed) is pathognomonic of acute tubular necrosis (ATN). Because hospital laboratories do not properly report MBGCs, nephrologists are required to independently perform MicrExUrSed, a time-consuming and challenging endeavor that requires expertise. Thus, a diagnostic test to identify MBGCs without performance of MicrExUrSed could prove useful for busy clinicians. We hypothesized that MBGCs-enriched urinary sediment (MBGC-sedi) contains unique proteins that could serve as surrogate of ATN.

Methods Used MicrExUrSed was performed in specimens from patients with acute kidney injury (AKI) seen for nephrology consultation with a suspected etiology of ATN. Urine specimens from 3 patients containing numerous (>10 casts per low power field) MBGCs were collected and subjected to low speed centrifugation (100 g) and stored at -80°C. Thawed pellets and urine were proteolytically digested and analyzed by nano-LC tandem mass spectrometry (Orbitrap Fusion Lumos). Proteins were identified by MASCOT and classified by gene ontology.

Summary of Results We identified 1678 proteins (1% false discovery rate) from supernatant and MBGC-sedi combined. Among them, 711 protein were unique to MBGC-sedi and 27 were unique to the supernatant. Normalized spectral abundance of 242 MBGC-sedi proteins was greater compared to the supernatant (p<0.05) and had proportionally more mitochondrial proteins (17 ± 1% vs. 6 ± 1%, respectively, p=0.0004). Based on spectral counts, the most abundant and unique mitochondrial proteins in all 3 samples included: ATP synthase alpha and beta-subunit, isocitrate dehydrogenase, 60kDa heat shock protein and aconitate hydratase. Six out of 7 cytochrome proteins identified were unique to MBGC-sedi.

Conclusions MBGC-sedi contains unique proteins compared to the supernatant. These proteins can serve as a foundation for the search of an ATN biomarker and surrogate for MBGCs detection by MicrExUrSed in patients with AKI. The predominance of mitochondrial proteins in MBGC-sedi may explain the characteristic brown pigmentation of MBGCs.

640 INCIDENCE OF NEW ONSET PROTEINURIA IN ACUTE KIDNEY INJURY ASSOCIATED WITH COVID-19 NOT GREATER THAN ACUTE KIDNEY INJURY FROM OTHER CAUSES

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Purpose of Study Early reports of acute kidney injury (AKI) associated with COVID-19 have claimed high incidence of proteinuria. This may suggest an AKI pathogenesis not solely related to ischemic acute tubular injury (ATI). We hypothesized that those claims result from observation bias. We investigated the rate of de novo proteinuria in AKI associated with COVID-19 (CoV-AKI) compared to that of AKI in the pre-COVID-19 era (non-CoV-AKI).

Methods Used Hospitalized patients with CoV-AKI entered the cohort (n=186). As a control non-CoV-AKI group (n=161), we accessed a database of patients with AKI who underwent urinary sediment microscopy due to suspicion of an intrinsic cause of AKI (Sedi-AKI cohort, 2017–2019). We examined the incidence of proteinuria of any degree (1+ dipstick), significant [urine protein-to-creatinine ratio (UPCR) ≥ 0.5–3.0 g/g or 2+ dipstick] or overt [UPCR ≥ 3.0 g/g + 3+ dipstick].

Summary of Results Median age was similar: 65 (34–95) and 60 (20–88) years for CoV-AKI and non-CoV-AKI, respectively. Women were 62% and 63% (p=0.86). Black race was more common in CoV-AKI (75% vs. 35%; p<0.0001). ATI (ischemic and/or toxic) was the presumed cause of AKI in 75% and 71% of CoV-AKI and non-CoV-AKI, respectively. Incidence of any, significant or overt proteinuria were 123/148 (83%) vs. 127/184 (69%) (p=0.003), 98/148 (66%) vs. 81/184 (44%) (p=0.0001) and 14/148 (10%) vs. 23/184 (13%) (p=0.39), for CoV-AKI and non-CoV-AKI, respectively. Among those with significant proteinuria, no difference in median UPCR was found [0.69 vs. 0.69 g/g (p=0.23)]. Using baseline UPCR when available, rates of de novo significant and overt proteinuria were similar [57/124 (46%) vs. 57/123 (46%) (p=1.00) and 6/124 (5%) vs 7/123 (7%) (p=0.75)]. Among overt cases who underwent biopsy, collapsing glomerulopathy was found in 3/4 (75%) in the CoV-AKI group compared to 0/11 (0%) in the control (p=0.002).

Conclusions Incidence of new-onset proteinuria was not increased in CoV-AKI and is consistent with that of other forms of ATI. A greater incidence in significant proteinuria in CoV-AKI may be driven by preexisting proteinuria. While the rate of overt proteinuria is not greater in CoV-AKI, the primary cause of de novo glomerular disease may vary.

641 URINARY WAXY CASTS ARE ASSOCIATED WITH PERSISTENCE OF ACUTE KIDNEY INJURY REQUIRING DIALYSIS

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Purpose of Study Waxy casts (WxCs) can be identified during microscopic examination of the urinary sediment (MicrExUrSed) and they have been classically linked to chronic kidney disease (CKD). We previously shown that WxCs predict severity of acute kidney injury (AKI). Thus, we hypothesized that WxCs may inform about duration and persistence of AKI and AKI requiring renal replacement therapy (AKI-RRT).

Methods Used We conducted a prospective observational study in patients seen in inpatient nephrology consultation with AKI stage ≥ 2 (AKIN) over 2.5 years. On the day of consult, MicrExUrSed was performed to determine the percentage of low power fields with WxCs. The outcome measures were persistence of need for RRT at the time of
hospital discharge (AKI-RRT-Persist) and $\geq 50\%$ rise in serum creatinine (sCr) from baseline at the time of hospital discharge (AKI-Persist).

**Summary of Results** Urine specimens from 286 patients [median age 60 (20 – 88), 37% women] were assessed. The etiology of AKI (de novo AKI 67%, AKI on CKD 33%) was ischemic ATI (47%), toxic ATI (9%), ischemic/toxic ATI (11%) or other (33%). WxCs were found in 85 patients (30%), 61 (72%) of which had de novo AKI. Median sCr for those with WxCs was 3.5 (0.9 – 22.0) mg/dL and 3.1 (0.9 – 12.5) mg/dL for those without WxCs (p=0.12). AKI-RRT at any point during the course of AKI was seen in 45% (38/85) of those with WxCs compared to 32% (54/201) of those without WxCs (p=0.043). There was a greater risk for AKI-RRT-Persist for those with WxCs [15.3% vs 7.5%, odds ratio (OR): 2.2, CI 1.1 – 4.9, p=0.046]. Presence and abundance of WxCs were also associated with a greater risk for AKI-Persist [62% (94/152), 75% (45/60), 81% (29/36) and 93% (13/14), for those with no WxC, any WxC, >10% WxCs and >50% WxCs, respectively; chi-square for trend, p=0.014].

**Conclusions** In patients with AKI, the presence and abundance of WxCs are associated with a greater risk for persistent need for RRT and persistent increase in sCr at the time of hospital discharge. These findings suggest that WxCs inform about the severity of AKI and the timeline of significant AKI recovery.

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**642 MORBID OBESITY, HYPERTENSION AND MALE SEX ARE ASSOCIATED WITH GREATER RISK FOR ACUTE KIDNEY INJURY IN PATIENTS WITH COVID-19**

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**Purpose of Study** Acute kidney injury (AKI) is a reported manifestation of COVID-19 (CoV-AKI). However, there is paucity of data regarding risk factors for CoV-AKI. We examined the association of demographics and comorbidities with CoV-AKI risk and its severity at an academic hospital in New Orleans.

**Methods Used** We conducted an observational study in patients hospitalized at Ochsner Medical Center over 1-month period with COVID-19 and diagnosis of AKI. We assessed the relationship between baseline demographic and clinical characteristics and the incidence of AKI, as well as AKI requiring renal replacement therapy (AKI-RRT), by assessing comparison of means and proportions and by logistic regression analysis.

**Summary of Results** Among 644 patients with COVID-19, we compared 161 (26%) with AKI vs 414 (64%) without AKI. Male sex (62% vs 51%, p=0.02) and essential hypertension (HTN) (83% vs 70%, p=0.002) were more common in the AKI group. Median body mass index (BMI) was higher among those with AKI (34 vs 31 kg/m$^2$, p<0.0001). No difference was found in age, race, presence of diabetes, chronic kidney disease or heart disease respect to AKI rate. On multivariate logistic regression analysis, HTN was strongly associated with greater risk for AKI [OR 1.96 (CI 1.2 – 3.2), p=0.009]. Male sex [OR 1.72 (CI 1.1 – 1.9), p=0.005] and higher BMI [OR 1.04 (CI 1.02 – 1.07), p<0.001] were also associated with AKI. RRT was required in 89 (55%) of the patients with AKI. Those with AKI requiring RRT (AKI-RRT) had higher median BMI (35 vs 33 kg/m$^2$, p=0.048) and younger age (61 vs. 68, p=0.0003) compared to those with AKI not requiring RRT. Of note, higher BMI correlated with younger age (R=-0.53, p<0.0001).

**Conclusions** HTN, male sex and higher BMI were associated with greater incidence of AKI in patients hospitalized with COVID-19. Higher BMI was further associated with AKI-RRT. Hypertensive, male and obese patients are at higher risk for CoV-AKI and should be more closely monitored during the COVID-19 pandemic.
Purpose of Study
Patients with end-stage renal disease (ESRD) are 8–10 times more likely to suffer from a stroke compared to the general public. Despite this risk, there are minimal data elucidating which hemodialysis modality is best for ESRD patients following a stroke, and physicians currently lack clinical guidelines for the management of these patients. To address this, we queried the United States Renal Data System (USRDS) for all-cause mortality in both intermittent hemodialysis (IHD) and continuous renal replacement therapy (CRRT) in ESRD stroke patients.

Methods Used
We retrospectively queried the USRDS for all adult ESRD patients who initiated hemodialysis (HD) between the years 2004 and 2015. Acute ischemic stroke and hemorrhagic stroke were identified using ICD-9 and ICD-10 codes, and HD modalities were determined using Healthcare Common Procedure Coding System (HCPCS) codes. The query yielded 87,910 stroke patients who met criteria for inclusion. Time to death from the first stroke diagnosis was the outcome of interest. Demographic variables were obtained from CMS-form 2728. Cox Proportional Hazards (CPH) modeling was used and associations were expressed as adjusted hazard ratios (HR).

Summary of Results
From the inclusion cohort, 81,491 (92.9%) patients received IHD while 6,250 (7.1%) patients received CRRT. CRRT was more commonly used in patients who were younger, male, white, hyperlipidemic, and used tobacco. After controlling for age, race, sex, ethnicity, and common stroke risk factors such as hypertension, diabetes, tobacco use, atrial fibrillation, and hyperlipidemia, those who were placed on CRRT within 7 days of a stroke had an increased risk of death compared to those not placed on CRRT [HR=1.28, 95% confidence interval (CI) 1.25–1.32].

Conclusions
ESRD stroke patients who received CRRT for treatment had worse all-cause mortality outcomes compared to patients who received IHD. This retrospective study provides broad, generalizable data from which clinicians can use to guide treatment in these patients. Further prospective clinical trials are likely warranted to confirm these findings.
Correction: 37 treatment of chylothorax following coronary artery bypass grafting with thoracic duct embolization


In the first paragraph of the Case Presentation, ‘left inferior mesenteric artery’ should have read ‘left internal mammary artery’. This has now been corrected.

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Withdrawn: 595 A rapid progressive fatal case of heat stroke


This abstract has been withdrawn. This is due to a miscommunication among the authors who participated in the study.

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