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2020
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Case Based Vignettes

SWOLLEN ROSES

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Introduction: Rosai-Dorfman disease, together with Langerhans cell Histiocytosis and Erdeheim Chester disease are histiocytic neoplasms. Due to the rarity of this disease, with less than 5 cases per million population each year and its diverse clinical presentations, the major challenge is diagnosis. RDD is a benign and often self-limited disorder of unknown etiology; however, occasionally it may progress with unfavorable outcomes.

Case Presentation: A 73-year-old woman presented to her primary doctor with a lump behind her right knee associated with mild dull pain. On physical exam the patient had a large firm and defined palpable mass without tenderness in the popliteal space of the right leg. Lesion was evaluated by x-ray which was only significant for degenerative changes and subsequently an MRI which showed a large infiltrative mass. Imaging findings were suspicious for a sarcoma, and the patient underwent a PET scan and a biopsy. PET scan, in addition to right popliteal mass, showed a left breast mass, right subcutaneous arm lesion, and anterior abdominal wall nodule, each with increased FDG uptake and all likely reflecting the same process. Right posterior knee core biopsy showed an inflammatory process with ill-defined granulomatous inflammation. Left breast excisional biopsy revealed similar features. These samples were composed of abundant histiocytes with co-expression of histiocyte markers and S100, highly suggestive of Extranodal RDD which was confirmed after expert consultation. With no systemic symptoms and no signs of progression, the plan of care for now is close observation.

Conclusion: This case illustrates the need to consider Rosai-Dorfman disease as a rare cause of soft tissue swelling as well as the challenges associated with tissue diagnosis and need for expert consultation. Although the prognosis is generally good, some patients may progress with very poor outcomes.

A CURIOUS CASE OF BYSTANDER HEMOLYSIS

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Introduction: RBC autoantibodies associated with delayed hemolytic transfusion reaction (DHTR) is a rare complication of RBC transfusion. We present a patient with DHTR resulting in temporary bystander hemolysis.

Case: An 80 y/o male with an unknown transfusion history was hospitalized for GI bleed with anemia. Pre-transfusion antibody screen was negative, and he received multiple units of compatible PRBCs. One week later, despite stabilizing the bleed, his hemoglobin dropped to 7.7. Repeat antibody screen was positive for anti-C and anti-E; DAT was negative. Patient became hemodynamically unstable with a persistent hemoglobin drop; he continued to receive multiple compatible transfusions. After 48 hours, patient developed severe retching, nausea, and hemoglobinuria. Antibody screening now revealed presence of anti-K and anti-JKa, in addition to previously identified anti-C, anti-E; DAT remained negative. He continued to receive compatible PRBCs as needed. Three days later, DAT was 2+ with IgG and 4+ with complement coating patient's RBCs; plasma was red and icteric. Further transfusions were discontinued, and he was treated with 2 cycles of plasmapheresis and steroids, following which his retching and nausea resolved. Hemoglobin improved to 9.6, and recovery remained uneventful.

Discussion: Bystander hemolysis is the destruction of antigen-negative red cells during immune hemolysis, like DHTR. Initially, our patient had low antibody titers, which were undetectable on pre-transfusion screening. After receiving multiple transfusions, he developed DHTR (evident by detection of anti-C, anti-E, anti-K, anti-JKa antibodies on repeat screening), which further induced a temporary bystander hemolysis (evident by presence of hemoglobinuria and positive DAT-2+ with IgG and 4+ with complement, despite receiving multiple compatible transfusions). Bystander hemolysis is an important consideration in cases of unexplained intravascular hemolysis following DHTR. Treatment options include plasmapheresis, steroids, and rituximab.

POEMS SYNDROME MIMICKING SCLERODERMA

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POEMS syndrome is a rare paraneoplastic typically caused by a lamda-chain plasma cell dyscrasia which can lead to a myriad of symptoms, most notably: Polyneuropathy, Organomegaly, Endocrinopathy, M-protein, and Skin changes. This rarely encountered disorder causes symptoms across many organ systems and, if identified early, can be reversible with proper treatment.

A 53-year-old man was referred to rheumatology clinic for workup of Systemic Sclerosis/Scleroderma after presenting to his PCP with cyanotic digits, Raynaud's Syndrome, and progressively worsening sclerodactyly with debilitating joint contractures. These symptoms had been progressively worsening over the past 5 years, in addition to lower extremity polyneuropathy, MGUS, and 100 lb. weight loss. Within a month patient was seen in the emergency department for abdominal pain and swelling. CT imaging revealed large volume ascites, cirrhotic appearing liver, and a large lytic lesion in the patient's right iliac. He underwent simultaneous workup by GI, Hematology, and Rheumatology. He was diagnosed with POEMS syndrome and a solitary plasmacytoma. He received definitive radiotherapy and following treatment he had improvement in energy, appetite, skin color, and ascites. Pt no longer requires paracenteses, however, continues to struggle with skin contractures and participates regularly in PT. This case describes an atypical presentation of POEMS syndrome that mimics systemic sclerosis. Early recognition of this syndrome is paramount as symptoms are often reversible with proper treatment.

DISSEMINATED M. BOVIS INFECTION AFTER IMMUNOTHERAPY FOR BLADDER CANCER

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Introduction: Intravesicular treatments with live attenuated Mycobacterium bovis Bacillus Calmette-Gurein (BCG) is one of the most common intravesicular immunotherapies for treating bladder cancer and has been used for over 30 years. This treatment typically has minimal side effects and is well tolerated.

Case Description: 76 year old man with history of bladder cancer status post resection and multiple intravesicular BCG treatments and L1-L5 laminectomies and foraminotomies who presented with 2 weeks of night sweats, lower back pain, and right lower extremity pain. Symptoms occurred about one month post laminectomies and foraminotomies after initial improvement. MRI spine at that time showed unusual degenerative changes, heterogenous paraspinal mass, and soft tissue mass with cystic components adjacent to left psoas. Initial biopsy of spinal lesion negative for infection, including fungal and acid fast studies, was negative for malignancy showing fibrosis with granulomatous inflammation. Tagged white blood cell scan also negative for infection and metastatic disease. Symptoms progressed with continued fevers and back pain. Repeat imaging demonstrated worsening right L2 epidural findings and worsening destruction at L1-L2 as well as evolution of left psoas mass suspicious for abscess vs phlegmon. CT guided biopsy of the L1-L2 disc space was again completed and demonstrated chronic necrotizing osteomyelitis/discitis and biopsy of psoas abscess showed fragments of skeletal muscles with severe inflammation and necrotizing granuloma. Given recent and recurrent BCG treatments for bladder cancer, suspected atypical infection with Mycobacterium Bovis. Additional infectious fungal and atypical infectious studies, including quantiferon gold, were negative. Patient was started on empiric treatment with rifampin, isoniazid, ethambutol, and vitamin b6. Mycobacteria culture/PCR from prior spinal biopsy returned positive for Mycobacterium tuberculosis complex and PCR positive for M. Bovis. This disseminated infection likely secondary to BCG treatments. Infectious Diseases continues to follow patient closely and he has had significant improvement with sensitivity driven antimicrobial treatment.

Conclusion: BCG treatment is one of the mainstays of non-muscular invasive bladder cancer and has been used for decades. Rarely, this treatment can cause joint and disseminated infection of M. Bovis and this case represents the course of this side effect. This atypical infection can be difficult to identify and requires long term treatment.

IDENTIFICATION AND MANAGEMENT OF IDIOPATHIC CAPILLARY LEAK SYNDROME, A RARE CAUSE OF DISTRIBUTIVE SHOCK

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Introduction: In 1960, Dr. Bayard Clarkson identified the first case of Idiopathic Capillary Leak Syndrome (ICLS). In his report, he described an otherwise healthy 34-year-old woman who experienced 22 episodes of severe third-spacing and resultant shock, with the final "attack" leading to her demise. Since this report, approximately 150 cases of ICLS have been described in the medical literature. Here, we report a case of an otherwise healthy adult male with a typical presentation of ICLS.

Case Description: 66-year-old man with multiple prior hospitalizations for undifferentiated shock had presented with pre-syncope, dyspnea, non-productive cough, and malaise of 4-days duration in setting of a recent viral upper respiratory tract infection (URI). Since presenting to the emergency department, he had rapidly decompensated, demonstrating severe hypotension, hypoalbuminemia, and hemoconcentration. Shortly thereafter, our patient experienced an episode of pulseless electrical activity requiring resuscitation while in the intensive care unit. Return of spontaneous circulation was achieved, and he subsequently underwent aggressive supportive management. With intravenous (IV) fluid resuscitation, vasopressor support, and initiation of stress-dose corticosteroids, his hemodynamic and metabolic statuses have normalized. Of note, he experienced rhabdomyolosis, a common complication of fluid redistribution but no compartment syndrome or pulmonary edema. He survived his hospitalization, and was discharged home to follow up in the outpatient setting.

Discussion: ICLS "episodes" are characterized by three phases, including a non-specific prodrome of viral illness, followed by the extravasation phase marked by a triad of severe hypotension, hypoalbuminemia, and hemoconcentration, and culminating in the final recovery phase, defined by fluid redistribution and resultant risk of intravascular hypervolemia. It is suspected that an underlying monoclonal gammopathy may contribute to the condition. Given its rarity and strong resemblance to other etiologies of distributive shock and systemic inflammatory responses, ICLS is probably underdiagnosed. Severe manifestations of ICLS may be alleviated with early recognition and aggressive supportive care, which includes fluid resuscitation and vasopressor support.

RARE CASE OF C-TMA WITH C3 GENE MUTATION

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Introduction: Thrombotic microangiopathy is a relatively rare condition that forms microthrombi occluding microvasculature. There are multiple etiologies including TTP, Shiga toxin-mediated HUS, drug-mediated TMA, complement-mediated TMA and other rare causes. Complement mediated TMA(C-TMA) is usually caused by mutations in complement genes or autoantibodies against complement regulatory proteins.

Case Presentation: A previously healthy 47-year-old gentleman presented to ED with generalized weakness, fatigue, dark urine and was found to have anemia, thrombocytopenia and acute kidney injury. Laboratory findings included an elevated creatinine and LDH, a low haptoglobin, and schistocytes on the peripheral smear. Thrombotic microangiopathy was suspected. The patient was given methylprednisolone and was scheduled for plasmapheresis immediately. Evaluation for causes of TMA including ADAMST-13, Shiga-toxin, and work-up for malignancy were negative. Complement activation syndrome work-up showed low total complement levels (C3, C4, factor H, factor B, alternate pathway function) along with a pathogenic mutation of C3 complement. The patient received eculizumab infusion following which the platelet count normalized and was discharged with improvement of symptoms.

Discussion: Once, all the differentials for TMA are excluded as mentioned above, it is cruciate to evaluate for C-TMA. We sent the samples to the Blood Center of Wisconsin, one of the academic centers in the US performing complement tests that evaluate for genes encoding complement factor H, I, B, membrane cofactor protein, complement component-3 and others. The C.481C>T(p.Arg16Trp)variant and C3 gene encode complement component-3 was mutated in our patient. Management of this type of TMA is stabilizing the patient and providing the anti-complement therapy eculizumab, which is a monoclonal antibody that blocks the formation of the membrane attack complex that leads to the microangiopathy changes and renal injury in C-TMA The benefit of immediate management with plasmapheresis is less clear for TMA than for TTP.

RETURN OF THE PRION: AN ACQUIRED PRION DISEASE CASE STUDY

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Human prion diseases are rare rapidly progressive neurodegenerative diseases caused by the misfolding and accumulation of prion proteins. The resulting clinical presentation is classically dementia, ataxia, dysesthesia, and involuntary movements. A widely publicized example is Variant Creutzfield-Jacob Disease (vCJD) caused by consumption of cow meat afflicted with bovine spongiform encephalopathy. Over the past decade, acquired disease has been on the decline, largely due to public health awareness. Chronic Wasting Disease (CWD), though, was found amongst the free-range deer and elk in Southern Wisconsin. This case report focuses on a patient who we believe to have developed CWD. Despite evidence that CWD associated prions can convert human prion proteins in vitro, the prevailing thought has been this variant does not transmit to humans. However, limited studies have noted concern for the possibility of transmission to humans.

A 73-year-old Caucasian male with few comorbidities presented to a large academic center after 6 weeks of progressive decline. Beginning with diplopia, the patient's symptoms progressed to include increased fatigue and somnolence, visual hallucinations, and later neurocognitive impairment and dementia. On evaluation he was noted to have marked rigidity, a marked essential tremor that worsened with agitation, and was nonverbal. An EEG and an MRI were done without any disease-specific findings. Later, an LP was done and sent for prion markers with a positive RT-quic, 14-3-3, and total Tau Protein >4000 pg/mL. Per his family, he had no family history of CJD or similar diseases. They noted yearly hunting trips with procurement and consumption of wild deer meat in South-Eastern Wisconsin for over 50 years. This patient fits criteria for probable Creutzfield-Jacobs Disease (CJD). Only post-mortem biopsy will determine if this patient suffered from a sporadic CJD disease or an acquired prion disease such as CWD. However, given the patient's history, there is concern that this is one of the first examples in Wisconsin of acquired prion disease. Given the potential effect on public health in the upper Midwest, further surveillance for case studies suggesting acquired prion disease is essential.

DISSEMINATED NECROTIZING LEUKOENCEPHALOPATHY AFTER INTRATHECAL CHEMOTHERAPY

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Introduction: Disseminated necrotizing leukoencephalopathy (DNL) is a rare complication characterized by multiple microscopic foci of white matter necrosis and demyelination. We present a case of DNL associated with recent intrathecal chemotherapy and sepsis.

Case: A 56-year-old female with a history of double hit diffuse large B-cell lymphoma (DLBCL) with sacral involvement causing neurogenic bladder presented due to a one-day history of fever and fatigue five days after completion of cycle 2B of CODOX-IVAC chemotherapy for treatment of DLBCL. Initial vital signs noted a temperature of 105F, blood pressure of 70/40 mmHg, and a heart rate in the 180s with supraventricular tachycardia noted on ECG. Physical exam revealed somnolence, diffuse petechiae, and a PICC line with surrounding erythema. Laboratory evaluation revealed a white blood cell count <0.1 K/uL, hemoglobin 8.8 g/dL, platelets 2 K/uL, procalcitonin 19.57 ng/mL, and lactate 2.4 mmol/L. Blood cultures were obtained and the patient was initiated on empiric antibiotic therapy for treatment of neutropenic fever and septic shock in the setting of treatment-related pancytopenia. Blood cultures returned positive for *Streptococcus mitis*. Despite aggressive antibiotic and antifungal therapy and culture clearance, the patient developed recurrent fevers and altered mental status, requiring intubation for airway protection on hospital day 5. Extensive work-up was unrevealing for infection or alternative etiology for the patient's progressive encephalopathy. Serial MRI brain imaging noted bilateral subdural fluid collections and multifocal areas of punctate T2 susceptibility artifact within the bilateral cerebral hemispheres, concerning for microhemorrhage. Unfortunately, the patient continued to deteriorate and died on hospital day 17. Neuropathologic examination on autopsy was revealing for DNL with petechial hemorrhages, moderate T-cell encephalitis of the white matter, and subarachnoid and subdural hemorrhages.

Discussion: Initially observed in pediatric patients following high dose systemic and intrathecal chemotherapy, DNL has been observed in immunosuppression states and in some cases of septic shock. Clinical manifestations include pyramidal syndrome, cerebellar dysfunction, altered mentation, and coma. While MRI imaging may aid diagnosis, DNL is often diagnosed via histopathology on autopsy. Optimal treatment has not yet been elucidated. Further characterization of the pathobiology and risk factors for DNL is needed.

STREPTOCOCCUS SANGUINIS BACTEREMIA WITH PULMONARY VALVE ENDOCARDITIS AND ASSOCIATED COLON ADENOCARCINOMA

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Introduction: We present a unique case of a patient with *Streptococcus sanguinis* bacteremia with pulmonary valve endocarditis and associated colon adenocarcinoma.

Case Description: A 69-year-old male was transferred from another hospital with acute respiratory failure. He was diagnosed with severe pulmonary hypertension, ischemic stroke, pneumonia, pulmonary embolism with subsequent placement of an IVC filter, and blood cultures were positive for *S. sanguinis*. On arrival, his vitals were normal and he was breathing comfortably with non-invasive positive airway pressure. His physical examination was significant for coarse breath sounds bilaterally, no heart murmurs, anasarca with 4+ pitting edema, and right sided weakness. The patient had a transthoracic echocardiogram (TTE) which demonstrated large, mobile vegetations on the pulmonary valve, severely decreased right ventricular systolic function, and a right ventricular systolic pressure of 74.2 mmHg. Blood cultures were negative since starting antibiotics at the previous hospital. ESR and CRP were elevated at 116 mm/hr and 7.1 mg/dL. Over ten days, his hemoglobin dropped from 8.3 to 6.6 g/dL. He underwent an esophagogastroduodenoscopy (EGD) and colonoscopy. The EGD was unremarkable. The colonoscopy revealed a 4-5 cm mass in the cecum and a 2.5 cm pedunculated polyp in the transverse colon. The patient underwent a laparoscopic right hemicolectomy and pathology results confirmed invasive colon adenocarcinoma without evidence of metastasis. He completed 4 weeks of intravenous ceftriaxone daily to treat bacteremia and endocarditis. A repeat TTE 8 weeks later showed persistent mobile vegetations on the pulmonary valve, unchanged severely decreased right systolic function, and an improvement of right ventricular systolic pressure to 52.9 mmHg. Repeat blood cultures remained negative. Four weeks after surgery, the patient was doing well without any complaints.

Discussion: *S. bovis* bacteremia is most commonly associated with colon cancer, however, several cases have now been reported of *S. sanguinis* bacteremia with endocarditis associated with colon adenocarcinoma. This case exhibits the importance of considering colon cancer in the setting of anemia and *S. sanguinis* bacteremia with endocarditis.

Research Based Vignettes

ENDOCRINOPATHIES WITH THE TYROSINE KINASE INHIBITOR IBRUTINIB – A RETROSPECTIVE ANALYSIS

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Background: Tyrosine Kinase Inhibitors (TKI) are a class of drugs used to for the targeted treatment of malignancies. Endocrine side effects like hypothyroidism, adrenal insufficiency, hyperparathyroidism, and gynecomastia have been established in a number of TKIs but have not been researched specifically in ibrutinib in prior studies.

Aim: To determine the adverse effects that occur with ibrutinib, specifically endocrinopathies. Our secondary objective was to determine outcomes in patients with endocrinological comorbidities on ibrutinib.

Methods: 105 patients aged >18 years who were on ibrutinib from November 2013 to January 2020 for treatment of neoplasm or graft vs host disease were chosen as our cohort.

Results: Sixty patients of 105(57%) developed adverse events. Gastrointestinal side effects were the most common (25%). Three of the 105 (2.8%) patients developed endocrinopathies after starting ibrutinib, namely gynecomastia, hypothyroidism, and hyperparathyroidism. The duration of time to development of the first adverse effect was approximately 3.6 years. Overall, there was no statistically significant difference in survival outcomes between people with and without endocrine comorbidities on ibrutinib (p 0.52).

Conclusion: This is the first study to our knowledge that has retrospectively analyzed patients on ibrutinib for endocrinopathies. Ibrutinib has been approved for increasing number of indications, thus underscoring the importance of determining its potential side effects. We ultimately found that although many TKIs have been shown to cause endocrine dysfunction, this is not commonly seen with ibrutinib.

EXPLORING MOTIVATIONS AND BARRIERS TOWARDS INTERNATIONAL VOLUNTEERING IN A COHORT OF AFRICAN AMERICAN MEN

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Background: International volunteering has the capacity to benefit volunteers and host communities; however, motivators and barriers to volunteering abroad are not well understood. This study aims to understand motivators and barriers to international volunteering among a cohort of African American (AA) men.

Methods: Cross-sectional study of data from 117 AA men. Motivators and barriers were selected from the literature and used to design an online Qualtrics survey using a Likert scale. ANOVA and t-tests were used to calculate the mean and standard deviation of each motivational factor and barrier. Differences in mean values were assessed by age (15-24 vs 25-44 vs 54+ years), education (<bachelors vs bachelors vs advanced), and household income (≤$59K vs. $60K+).

Results: Motivators: gaining work experience ($p<0.001$), helping a new community ($p=0.026$), and learning about and connecting with a new community differed significantly by age ($p<0.001$). Improving intercultural communication ($p=0.011$) and gaining work experience ($p<0.001$) differed significantly by education. Men from homes making <$60K annually had significantly higher means for improving intercultural communication ($p=0.028$), gaining work experience ($p<0.01$), helping a new community ($p=0.018$), and learning about and connecting with a new community ($p<0.01$). Barriers: Cost of volunteering was the most significant barrier overall ($p=0.0001$). Time needed to volunteer ($p=0.01$) and gaining acceptance to a program ($p<0.01$) differed significantly by age. Gaining acceptance to a program was ranked higher in men making <$60K ($p=0.001$). There were no significant differences for barriers by education.

Conclusion: In this sample of AA men, mean values for motivators and barriers to international volunteering differed significantly by age, education, and income. More data and research using advanced analyses is needed to understand the relationship between motivators and barriers to international volunteering.

PSYCHOSOCIAL EVALUATION OF PATIENTS WITH ALCOHOL-RELATED LIVER DISEASE (ALD) AND ITS IMPACT ON TRANSPLANT (LT) LISTING

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Background: The purpose of psychosocial evaluation for LT is to select recipients who will have favorable post-transplant outcomes, as shown by adherence to complex medical care and abstaining from harmful alcohol or substance use (1). The Stanford Integrated Psychosocial Assessment for Transplant (SIPAT), a semi-structured interview tool which considers four domains (readiness, social support, psychological stability, and substance use), generates a composite score, in which higher scores indicate greater psychosocial distress. SIPAT has been validated for evaluation of candidates for solid organ transplants (2). We hypothesized that psychosocial distress would be higher in patients with alcohol-related liver disease (ALD) as compared to those with non-ALD, and the decision to offer LT to ALD patients would be restricted to those with more favorable psychosocial assessments.

Methods: We conducted a retrospective review of consecutive patients undergoing LT evaluation at a single US institution between June 2018 and December 2019, with 358 patients included in our final analysis. Data was collected on demographics, etiology (ALD vs. non-ALD), SIPAT scores, MELD score at evaluation, and LT listing decision. Comparisons between ALD vs. non-ALD patients were conducted using nonparametric Wilcoxin rank sum test, as well as a multivariate analysis to determine independent predictors for approval.

Results: Of the 358 patients, 199 (56%) had ALD. White males predominated in both the ALD (94%) and non-ALD (92%) groups, with median ages of 55 and 57 years respectively. In the ALD group, the mean MELD scores for those who were approved versus not approved was 25.0 and 25.6, compared to 18.3 (approved) and 17.4 (not-approved) in the non-ALD group. Patients with ALD had higher mean SIPAT scores, composite scores, and subscores in all four domains as compared to their non-ALD counterparts. A significantly higher proportion of non-ALD candidates were selected compared to ALD candidates (68% vs 42%, $p<0.001$), and the odds ratio for approval when comparing non-ALD patients to ALD patients was 2.9 (95% CI: 1.8-4.7; $p<0.0001$).

Conclusion: The ALD patients in our cohort had higher MELDs and greater psychosocial distress than their non-ALD counterparts, and ALD patients were less likely to be selected than non-ALD patients. In the ALD group, MELD scores were similar between those who were approved and those not approved for LT, whereas the SIPAT scores in approved ALD patients were significantly less, suggesting that psychosocial stability is a main determinant for LT listing of ALD patients.

RESULTS OF THE CORONARY RISK DETERMINATION IN INTERMEDIATE STRATUM CORONARY CT ANGIOGRAPHY (CORDISC) STUDY. MAJOR ADVERSE CARDIAC EVENTS IN NON-OBSTRUCTIVE (<50%) CORONARY ARTERY DISEASE AT ONE YEAR FOLLOW UP

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Research Goal: Compare non-fatal MI, revascularization (PCI or CABG), major adverse cardiac events (MACE) one year following coronary CT angiography (CCTA) in patients with non-obstructive (<50%) CAD and normal coronary arteries.

Introduction: One year following CCTA, patients with CCTA defined obstructive CAD (≥50%) have increased risk of non-fatal MI, revascularization including PCI or CABG, and all-cause mortality higher (MACE) compared to those with normal coronary arteries (NLCA). However, in patients with non-obstructive coronary artery disease by CCTA (<50%) (NobCAD) these events at one year remains unclear. We compared these events 1 year following CCTA in patients with NobCAD and NLCA.

Research Design: A CCTA retrospective cohort study from 2009 to 2017 contained in our CCTA registry was used to collect prospectively patients with CCTA diagnosed with NLCA and NobCAD. Non-fatal MI, revascularization including PCI or CABG, and MACE for those with NLCA and NobCAD were assessed 1 year after CCTA.

Results: Of the CCTA studies assessed, 1395 had NLCA and 355 had NobCAD. Those with NobCAD were older compared to NLCA (61 years vs 52 years; p<.001). Women were more likely to have NLCA compared to NobCAD (60% versus 40%; p<.001). No gender difference was seen in the NobCAD group. Frequency of MI between the two groups was similar (p=0.23). Revascularization was significantly higher in NobCAD but the numbers were small (12 cases). There was a significant difference in death and MACE when comparing the NLCA and NobCAD (4.7% vs 9.0% for death; p<0.003 and 6.0% vs 13.8%; P<0.001 for MACE) respectively.

Conclusion: One year following initial CCTA those with NobCAD have significantly higher risk of death and MACE compared to those with NLCA. Frequent follow-up may be warranted when NobCAD is found on CCTA.

Displayed Posters

1) THE UNEXPECTED OFFENDERS: CEPHALOSPORINS

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Introduction: Acute generalized exanthematous pustulosis (AGEP) is a rare drug reaction that is characterized by numerous, non-follicular sterile pustules on a background of edematous erythema beginning on the face, then major intertriginous zones disseminating over hours. Fever and acute, significant leukocytosis are also usually present. Lesions typically last from 1-2 weeks and are followed by superficial desquamation. In severe cases systemic involvement is seen in the liver, kidney, and or lungs. Medications that most frequently induce AGEP include antibiotics (aminopenicillins, cephalosporines, clindamycin) and a calcium channel blocker. Withdrawal of the offending drug is the major therapeutic intervention and topical corticosteroids.

Case: A 63-year-old female was admitted to the hospital with urosepsis. Physical exam was unremarkable except for mental status changes secondary to sepsis. Labs showed leukocytosis and worsening renal function with imaging showing right hydronephrosis caused by a ureteral stone, which prompted a stent placement and was placed on linezolid and ceftriaxone. Her recovery was complicated by pneumonia, so her antibiotic regiment was broadened to linezolid and cefepime. Shortly after starting cefepime she was septic again, but this time with a new diffuse, erythematous, pustular, desquamating rash. Dermatology diagnosed the patient with AGEP caused by cephalosporines. The pustules were cultured and found to be sterile. Cefepime was discontinued and after one week her skin, kidney function, mental status, and white cell count improved.

Discussion: Here we present a case of AGEP where the patient was found to have scattered erythematous macules covering greater than 80% of the body surface with clear, sterile pustules in intertriginous areas with substantial desquamation. AGEP is a rare acute drug reaction that should be more well-known due to its strong association with antibiotics and, in this case, cephalosporins especially because they are used as empiric treatment for many infections within hospitals.

2) DRY SKIN OR MALIGNANCY?

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Introduction: Acquired ichthyosis (AI) is a cutaneous manifestation of malignancy. The presentation is very similar to ichthyosis vulgaris both presenting with fishlike scales. It is thought that AI is either caused by secretion of keratinocyte growth factors by tumors or simply an autoimmune response by the skin. Hodgkin lymphoma is most commonly associated with this skin finding, and less commonly with other CD30+ lymphoproliferative disorders such as anaplastic large cell lymphoma (ALCL).

Case: The patient is a 68-year-old African American male with a history of sarcoidosis who was admitted from an outpatient visit for significant weight loss, an unexplained diffuse, scaly rash, and a 4 cm mobile, non-tender axillary lymph node. He presented a month prior to another hospital with the same dry, diffuse ichthyotic scale over his entire body and moisturizers were recommended. Once admitted, dermatology felt this was AI in the setting of malignancy and confirmed with a punch biopsy. Biopsy of the lymph node showed ALK negative ALCL.

Discussion: We present a case of AI in the presence of ALCL. AI is not to be confused with ichthyosis vulgaris, which is a mutation in Filaggrin, which helps form an effective skin barrier. When one looks at the symptoms: enlarged, non-tender lymph node, significant weight loss, and night sweats, this is a classic case of lymphoma with an added red flag: AI. It is unclear why the patient was sent home without further work-up prior to this admission, but provider education, awareness, and exposure to dermatologic conditions in People of Color could have facilitated earlier diagnosis. Unfortunately, dermatologic findings are not taught on dark skin tones, which causes providers to be unfamiliar with them. With a diversifying population, medical education needs to evolve and include physical exam findings in dark skin tones.

3) MAY THURNER SYNDROME: AN UNDERESTIMATED CONDITION WITH SINISTRAL OUTCOMES

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Abstract: May Thurner syndrome (MTS) also known as iliac vein compression syndrome or Cockett syndrome is a relatively common entity but one which often remains undiagnosed. It is considered to be a risk factor for left-sided iliofemoral deep vein thrombosis (DVT) which can progress to fatal massive pulmonary embolisms (PE). In addition to mechanical alterations to the vessel wall, hypercoagulable states are found in majority of patients with MTS associated DVT. We present an interesting case of a middle-aged lady with MTS who presented with extensive lower extremity DVT and right-sided segmental pulmonary embolism (PE). Interestingly, she had prior history of provoked right lower extremity superficial thrombophlebitis successfully treated with 1 month of anticoagulation. MTS in our patient was diagnosed with intravascular ultrasound during interventional radiology guided venography of lower extremity and pelvic vessels. She was successfully treated with catheter directed alteplase thrombolysis followed by 24-hour continued thrombolysis with alteplase and heparin. Residual clots in the left iliac vein were treated with pharmacomechanical thrombectomy. The anatomical compression of the left iliac vein was treated with stent followed by balloon venoplasty. Post procedure, she was initiated on antiplatelet therapy with aspirin indefinitely as well as anticoagulation with apixaban for at least 6 months. Our patient had negative hypercoagulable work-up. At 6-month follow-up she continues to do well. MTS continues to challenge physicians up till this day. It can have debilitating sequelae if not recognized timely and not treated effectively. Prevention of post treatment complications with effective antiplatelet and anticoagulant therapy remains the mainstay of management after endovascular stenting of the anatomical lesion. To prevent recurrence, clinicians should have high index of suspicion for MTS in someone with unprovoked left sided DVT without evidence of hypercoagulable state.

4) A SUCCESSFUL STORY OF BLASTOMYCOSIS INDUCED ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS) WITH PRONE POSITION VENTILATION AND NEURALY ADJUSTED VENTILATORY ASSIST (NAVA)

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Abstract: Blastomycosis is a systemic mycosis endemic to Midwestern and Southcentral United States. Infection is caused by inhaling spores of Blastomyces dermatitidis (B. dermatitidis) that inhabit soil. Acute respiratory distress syndrome (ARDS) is a rare complication of pulmonary blastomycosis with significantly high mortality rate. We present a case of blastomycosis associated severe ARDS treated with traditional prone position ventilation (PPV) and neurally adjusted ventilator assist (NAVA) along with antifungal therapy, steroids and supportive care in a rural setting with no access to extracorporeal membrane oxygenation (ECMO). Blastomycosis-associated ARDS is a rare entity with a high mortality rate. Limited literature is available regarding its management and successful outcomes. Antifungal therapy with liposomal amphotericin B (L-AMB) and lung protective low tidal volume ventilation has proven to be of benefit as well as PPV in severe ARDS. NAVA is a new mode of assist mechanical ventilation that has documented benefit in improving patient-ventilator synchrony and select ARDS patients; however, its use in blastomycosis-associated severe ARDS has not been explored. This case demonstrates that traditional therapies such as prone position ventilation can help patients with blastomycosis-associated ARDS especially in rural settings where advanced therapies such as ECMO are lacking. The use of NAVA in blastomycosis-associated ARDS needs further research.

5) A CASE OF NECROTIZING MYOSITIS

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A 69 year old man with a history of diabetes, hypertension, hypothyroidism, and chronic lower back pain presented to the hospital with an episode of confusion, gait imbalance, and dysarthria. MRI showed no evidence of stroke, so he was diagnosed with TIA and subsequently started on a statin. Four months later, he presented again to the hospital with progressive, generalized, but predominantly proximal painless weakness and multiple falls. Per his family, he had recently been requiring assistance with activities of daily living such as dressing and even walking. On physical exam, he had decreased strength of multiple muscle groups: shoulder abductors, elbow flexors, and hip flexors.

Rheumatology was consulted. MRI of bilateral femurs showed non-specific edema-like signal and mild enhancement within the muscles of the left proximal adductor as well as both quadriceps muscles with fluid superficial to and between quadriceps muscles, suggesting a nonspecific myositis. He was started on prednisone daily empirically. Atorvastatin was held since initial CK was elevated at 17k and differential diagnosis included statin induced myopathy. At a follow up appointment to Rheumatology, the patient reported continued weakness and now increased pain in all extremities. He received IVIG for 2 doses. His CK had trended down to 2500 at this time. Fortunately, he was now able to walk on his own. However, he continued to complain of weakness and myalgias. EMG done showed axonal neuropathy. Antibody and serum marker testing results were not indicative of dermatomyositis or polymyositis. Muscle biopsy was now indicated for further evaluation.

Muscle biopsy of the left vastus medialis showed changes indicative of both active and chronic necrotizing myopathy, with some necrotizing fibers and atrophic fibers, along with edema and increased histiocytes. However, there were no inflammatory aggregates which are usually indicative of dermatomyositis, inclusion body myositis, or anti-synthetase syndrome. Antibody testing subsequently done showed HMGCR antibody related myopathy.

This case illustrates the diagnostic complexity of necrotizing myositis, and the attention to detail and clinical correlation that is required to rule out various other myositis disease processes before coming to the conclusion of HMCGR antibody related necrotizing myositis.

6) THE SPECTRUM OF ILLNESS SECONDARY TO COVID-19 INFECTION

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Causes of death due to COVID-19 infection are an increasing concern around the world in the midst of the pandemic. The ability of our healthcare providers to identify hemophagocytic lymphohistiocytosis (HLH) and administer a timely treatment is crucial for the survival of our patients. HLH is a potentially lethal phenomenon characterized by hyperactivation of macrophages and increased cytokine production. The presentation is acute and usually seen in infants and young children. We herein report a rare presentation of HLH in a 49-year-old Caucasian male that was secondary to COVID-19 infection. Our patient manifested four weeks after the onset of the infection with fever and splenomegaly. His blood work also revealed leukopenia, anemia, thrombocytopenia, hypertriglyceridemia and an elevated D-Dimer, ferritin, and CD25/IL-2R levels. Diagnosis was confirmed with bone marrow aspiration that showed hemophagocytosis. The patient underwent mechanical ventilation and was started on etoposide with dexamethasone, bronchodilators, oxygen therapy and heparin. Recovery is ongoing.

7) DIMENSIONS OF LEFT ATRIAL APPENDAGE IN PATIENTS WHO HAVE A LEFT ATRIAL APPENDAGE THROMBUS VS PATIENTS WHO HAVE NOT

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Introduction: Patients with atrial fibrillation (AF) take blood thinners to lower the risk of intracardiac thrombus and embolic events. Because most intracardiac thrombi in AF form in the left atrial appendage (LAA), catheter-based occlusion of the LAA also reduces stroke risk in patients unable to tolerate chronic oral anticoagulation. We conducted a retrospective study of AF patients comparing LAA dimensions in those with and without documented left atrial appendage thrombus.

Purpose: implanting the watchman device requires a procedure which comes with risks; therefore, the study strives to asses which patients are good candidates for the watchman cardiology device.

Methods: Using EPIC at the Medical College of Wisconsin, we identified a list of patients with a history of AF and a diagnosis of confirmed Left Atrial Appendage (LAA) thrombus based on transesophageal echo (TEE) imaging. The control group consisted of patients with a diagnosis of AF who had also undergone a TEE as part of the screening process for Watchman LAA occlusion device candidacy but did not have LAA thrombus on TEE. Using the TEE, we then measured the LAA ostial and length dimensions from several orthogonal views (likely in at least 2-3 views- 0/45/90/135 degrees). We gathered our data in an excel sheet. A scatter plot was made, and a p-value was calculated to determine the significance of our findings. Additionally, we have omitted variable bias by selecting patients through randomization.

Results: There was a significant statistical difference in the diameter of the os of the LAA between the control and study group (p= 0.021838553). The depth did not have any significant difference (p= 0.790363051). Standard error (SE) depth study: 0.36, AVG: 24.01, control: 0.3, AVG: 24.9 SE os study: 0.25, AVG: 17.37, control: 0.39, AVG: 19.5

Conclusions: Overall, there was a significant difference in the diameter of the os in patients with thrombus versus those without. It would be interesting to include other selection factors in future studies.

8) A NOVEL CASE OF CENTRAL LINE-ASSOCIATED INFECTION DUE TO YOKENELLA

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Background: *Yokenella regensburgei* bacteremia due to indwelling catheter colonization.

Objective: Clinicians should be aware of this bacterium's ability to cause catheter-related bloodstream infection.

Case Report: 24 year-old female with peripherally inserted central catheter (PICC) for parenteral nutrition had outpatient blood cultures positive for gram-negative rods. A complicated medical history included recent multi-drug resistant urinary tract infections, taking oral vancomycin for chronic colitis. Patient had seen primary care for vomiting, high fevers, and myalgias, flu negative, both peripheral and PICC cultures drawn. Upon admission was placed on intravenous piperacillin-tazobactam empirically. PICC tip culture resulted colonies of pan-sensitive *Yokenella regensburgei*. Patient was narrowed to ciprofloxacin and discharged day five following new PICC placement.

Discussion: *Y. regensburgei* has been isolated from well water and is a symbiont in stink bugs and tiger mosquitoes. Most often encountered as an opportunistic commensal in the immunocompromised, *Yokenella regensburgei* may be drug resistant or with inducible beta-lactamases. Owing to this bacterium's emerging relevance, clinicians should be aware of its pathologic potential.

9) EXAMINING THE SOCIAL NETWORK OF PATCH TEENS

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The Providers and Teens Communicating for Health (PATCH) program employs a group of teens to deliver workshops to peers and health care providers. The teens increase awareness of common adolescent healthcare barriers and through the workshops encourage open discussions between teens, their parents, and their health care providers. Although many aspects of PATCH have been studied, few have looked into the social network of the teens and whether it evolves during their participation in the program. A survey was administered to 10 PATCH teens via Qualtrics before, during, and after the 2019-20 PATCH program. The survey asked simple questions regarding their level of comfort with health-related topics, how many peers they provide resources or advice to, and what topics they are most frequently asked about. The results of the survey revealed that while PATCH teens interact with a narrow spectrum of the teenage population, their social networks include adult community members in addition to their peers. The PATCH program was successful in broadening the healthcare and advocacy knowledge base of the 2019-20 cohort of teens. Results will help us identify recruitment and curriculum gaps within the PATCH program. We hope to continue to improve the sustainability of PATCH Central WI and eventually develop a similar program for adults.

10) CREATING A CULTURE OF QUALITY – OUR EXPERIENCE WITH PROVIDING FEEDBACK TO FRONTLINE HOSPITALISTS

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Introduction: Hospitalists are tasked with improving the quality of care across several different inpatient metrics. While most quality metrics are driven by systems of care, it can be challenging for frontline providers to address variations in individual practice, if any, in the absence of feedback on their own performance. There is limited data on the means, frequency and content of feedback that should be provided to frontline hospitalists on their performance on quality metrics. We report our experience with a comprehensive feedback system for frontline hospitalists, as well as reporting the change in our quality metrics after implementation.

Methods: Our section of hospital medicine is made up of 46 Full Time Equivalent (FTE) faculty members. A monthly feedback packet was distributed to provided ongoing feedback to our hospitalist faculty, including an individual dashboard and a ranked peer comparison report, complemented by coaching on tactics to incorporate process improvement tactics into providers' daily workflow. The main outcome of our project is the change in quality metrics after the implementation of the feedback packet.

Results: Since this feedback packet was instituted one year ago, an improvement was seen in the following quality metrics: length of stay index (0.97 to 0.90), 30-day readmission rate (18.2% to 17.4%), CAUTI (11 to 1), CLABSI (7 to 5), provider component of HCAHPS scores and percentage of discharge orders placed by 10 am (14.6% to 31.7%).

Conclusions: A monthly feedback packet delivered electronically to frontline faculty can be a helpful adjunct to creating a culture of quality in a hospitalist group. We believe this ongoing, peer compared feedback has been critical to improving faculty awareness, with subsequent engagement in the adoption of tactics that helped improve their performance on quality metrics. Anecdotal feedback from faculty has generally been positive, although some faculty have been critical of this emphasis on transparency around performance. We plan on continuing to provide this monthly feedback packet, while adding the following components: order set utilization, attendance at care coordination rounds and correct identification of primary inpatient provider.

11) LEMIERRE'S SYNDROME CAUSING PROFOUND THROMBOCYTOPENIA AND RESPIRATORY FAILURE: A CASE REPORT

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Lemierre's syndrome is an extremely rare complication of bacterial pharyngitis typically caused by the gram-negative *Fusobacterium* which can lead to infectious thrombophlebitis. The syndrome is known to be associated with thrombocytopenia due to the hemagglutinin glycoprotein produced by the *Fusobacterium* species. To our knowledge the effect on platelets is typically mild to moderate and it rarely affects other cell lines. Here we describe a case of Lemierre's syndrome in a previously healthy young man who presented with profound thrombocytopenia and leukopenia subsequently requiring intubation for respiratory failure. We also review current literature and strengthen the necessity for considering Lemierre's syndrome in patients who present with new-onset thrombocytopenia and hematologic dysfunction in the setting of oropharyngeal symptoms.

12) SRP POSITIVE NECROTIZING MYOPATHY: TAKES MORE THAN JUST THE MUSCLES

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Introduction: Necrotizing myopathy is a rare autoimmune disease that is thought to primarily affect muscles and present as weakness. There are reports of associated effects the heart and lungs.

Case Description: The case described here is of a middle-aged woman presenting with a chief complaint of shortness of breath, who was subsequently found to have muscle weakness and respiratory failure due to SRP positive myopathy.

Conclusion: When working a patient up for Shortness of breath and weakness, it is imperative to consider the possibility of myopathies as the ubiquitous nature of the SRP autoantibodies can lead to diverse patient presentations which can extend beyond proximal muscle weakness.

13) METASTATIC RENAL CELL CARCINOMA WITH RHABDOID FEATURES IN A YOUNG FEMALE ON ADALIMUMAB

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In renal cell carcinoma, rhabdoid features are present in only 3-7% of adult cases. This number is even less in female patients under age 50. We present a case of a 37 year old Caucasian female, active smoker with a history of type 2 diabetes mellitus and severe hidradenitis suppurativa on Adalimumab who presented with 2 weeks of worsening epigastric pain associated with poor appetite and progressive weakness. Review of symptoms revealed night sweats and weight loss. Physical exam was remarkable for diffuse abdominal tenderness. Initial lab work revealed hemoglobin 5.2, white blood cell count 15.7, platelet count 621, erythrocyte sedimentation rate >140, and C-reactive protein 7.8. A CT scan demonstrated a 14.3 x 11.9 x 16.7 cm left renal mass with extension into the IVC. A biopsy of the mass revealed a high grade carcinoma with rhabdoid features. Immune staining was negative for PAX-8 and SF-1 suggesting significant dedifferentiation, however based on CT imaging her malignancy was deemed renal cell in origin. Given the invasion of the mass into the IVC, surgery was not feasible. She was treated with Pembrolizumab and Axitinib with subsequent regression of her tumor burden.

In addition to her young age, this patient's case is remarkable for her use of TNFα blocker Adalimumab. Reports regarding TNFα blockers in relation to malignancies are contradictory. While some studies assert a causative relation between these medications and solid organ malignancies, others contrarily suggest its efficacy in the treatment of these tumors. More studies are needed to further assess the possible role of TNFα blockers in the etiopathogenesis of solid organ malignancies.

14) MEDICAL STUDENTS' PERCEPTION ON THE IMPACT OF THEIR SCHOLARLY PATHWAY ON EMPATHY LEVEL

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Background: Greater empathy in physicians and students has been shown to improve clinical outcomes and increase resilience. Despite these advantages, studies have shown that today's medical education leaves graduates with less empathy than when they started. Scholarship and mentorship are important for academic medicine, but empathy is vital to provide meaningful patient care. All MCW students participate in a scholarly pathway and complete a scholarly project. They can choose from Bioethics, Clinician Educator, Global Health (GH), Clinical and Translational Research, Molecular and Cellular Research, Quality Improvement and Patient Safety (QIPS), and Urban and Community Health (UCH). MCW's scholarly pathways allow students to individualize their medical school experience by exploring a career path that is of interest to them and of vital importance to the lives of future patients. This survey based project was designed to study current medical students' empathetic growth based on their pathway choices.

Methods: A questionnaire was administered to 403 M3 and M4 MCW medical students. The survey assessed each student's perception about the role of empathy in patient care and outcomes. We also assessed their perception about the role of scholarly pathways on their level of empathy. Responses were obtained on a 5-point Likert scale and the data was analyzed as respective frequencies and percentages.

Results: Of 403 medical students, 146 (36%) completed the survey. The majority (96%) reported that empathy improves patient outcomes and satisfaction. Forty four percent reported their choice of scholarly pathway has positively influenced their empathy level. Students in the UCH, GH, and QIPS pathways reported the highest influence on their empathy level.

Conclusion: MCW students perceive empathy as crucial for patient care and satisfaction. Pathways with opportunities for interaction with patients and the community had a positive influence on the level of empathy. One student commented, "My pathway frequently discusses vulnerable populations and socioeconomic factors that influence health. Learning these things has made me more aware of the challenges that people face surrounding health care and access, and this has made me more empathetic." Medical schools need to find ways to promote empathy earlier in training. Pathways has allowed MCW students this opportunity. There is a need for innovation in curriculum to promote scholarship with emphasis on care, compassion and empathy, much like the experience that many students have through their pathway.

15) FUSOBACTERIUM NECROPHORUM: FRIEND OR FOE

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Introduction: *Fusobacterium necrophorum* is an anaerobic gram negative bacillus commensal to the oropharynx and commonly implicated in pharyngitis. It can also cause Lemierre's Syndrome, which presents with pharyngitis, fever, and jugular vein thrombophlebitis. Meningitis due to *fusobacterium* is a rare and potentially fatal complication.

Case Description: A 19 year old female with asthma presented with sore throat and fatigue and was treated for infectious mononucleosis with supportive care. Her symptoms worsened, and she returned to the hospital in distress due to throat swelling, nausea, vomiting, severe headaches, anorexia, photophobia, and blurry vision. Patient was febrile on exam. Her right eye showed proptosis, chemosis, painful extraocular eye movements, and bilateral cranial nerve 6 palsy. Labs showed leukocytosis, transaminitis, and thrombocytopenia. Lumbar puncture showed cloudy yellow fluid, WBC 2069, 66% neutrophils, glucose 56, and protein 190. CT showed bilateral cavernous sinus and right superior ophthalmic vein thrombosis, and opacification of the right frontal, maxillary, and sphenoid sinuses. Based on her clinical picture and consults with infectious disease, otolaryngology, and ophthalmology, broad spectrum IV antibiotics were started. Blood cultures were positive for *fusobacterium necrophorum*, and antibiotics were narrowed to ceftriaxone and metronidazole. ENT treated her sinusitis with right sinus surgery with maxillary antrostomy and septoplasty. Ophthalmology treated her eye with erythromycin ointment and heparin for anticoagulation of her thromboses. On day six of admission, she showed great improvement. She was discharged with antibiotics and anticoagulation.

Discussion: We report a rare case of *fusobacterium* meningitis complicated by bacteremia, sinusitis, cranial nerve 6 palsy, and superior ophthalmic vein and cavernous sinus thromboses. Another CNS complication caused by *fusobacterium* is brain abscesses. Most cases of gram negative bacilli meningitis are reported to occur after head trauma or neurosurgical procedures. Identifying the bacterium is often delayed because anaerobic CSF cultures are usually not collected. Gram negative bacilli meningitis mortality is high and increases significantly in patients with bacteremia. A literature review found five adults with *fusobacterium* meningitis responded well to metronidazole and ceftriaxone. There are currently no guidelines for the treatment of meningitis due to *fusobacterium*. This case highlights the need to consider *fusobacterium* as a cause of meningitis, particularly when the history includes pharyngitis.

16) STRESSING OUT ABOUT ADRENAL HEMORRHAGE

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Case Description: A 72-year-old male with a history of recent total knee arthroplasty (TKA) presented with severe abdominal pain without other GI symptoms. He was initiated on rivaroxaban for DVT prophylaxis two weeks prior after TKA. Initial work up was significant for leukocytosis of 11.7 and lactate of 8.5. CT Abdomen/Pelvis and right upper quadrant ultrasound showed no acute pathology. He was admitted for further workup, empiric antibiotics, and pain control. Despite treatment with large doses of morphine, his pain continued to worsen over the first day of admission and was notably out of proportion to abdominal exam. Repeat CT Abdomen was performed overnight and revealed interval development of bilateral adrenal hemorrhages. Vitals, at that time, were significant only for mild hypertension. Electrolytes and hemoglobin were within normal range. Anticoagulation was stopped, steroid administration was deferred as patient had no clinical signs of adrenal insufficiency. ACTH stimulation test the next morning revealed diminished cortisol response to ACTH administration. The patient was initiated on hydrocortisone and fludrocortisone and discharged with close endocrinology follow-up.

Discussion: Heparin products are known to cause adrenal hemorrhages, however, with the NOACs being used more frequently, literature is developing around their potential to cause adrenal hemorrhages. When found incidentally, half of patients with adrenal hemorrhage do not have signs of adrenal insufficiency prior to progressing to shock. It is therefore essential to obtain corticotropin stimulation testing on all patients and to have a very low threshold prior to initiating steroid therapy as adrenal crisis has a 15% mortality. Due to its significant mortality rate, adrenal hemorrhage should be considered in patients who present with refractory abdominal pain and are on any form of anticoagulation.

17) A RARE CASE OF MACROPHAGE ACTIVATION SYNDROME WITH PYODERMA GANGRENOSUM

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Case Description: A 24 yo male with a history of juvenile idiopathic arthritis (JIA), macrophage activation syndrome (MAS), and pyoderma gangrenosum presented with fever to 102.9ºF and rash for 2 days. He had a diffuse, erythematous, un-raised, itchy rash which started on his arms and spread to his chest and back. He had recently been started on dapsone 10 days prior for management of his pyoderma gangrenosum. He was supposed to be on IVIG, but due to insurance reasons could not receive it. This caused a worsening of his disease. He was diagnosed with JIA as a child, and had his first episode of MAS at 5 years old. Since then, he has had multiple episodes that typically present with fever, rash, and fatigue. A year ago, he was diagnosed with pyoderma gangrenosum, and has had multiple sores since then. Dermatology and rheumatology were consulted from the beginning, and labs were significant for a low white blood cell count, hemoglobin, and platelet count, and elevated ferritin level and AST. He was started empirically on antibiotics, however, after further testing, these were discontinued because there were no clear signs of infection. He was diagnosed with an MAS flare most likely triggered by the dapsone, and started on an IV burst of methylprednisone for three days. He was discharged in a stable condition with plan to continue his current rheumatologic regimen of Anakinra, and his PO steroids at discharge. He also received 2 doses of IVIG to help with his pyoderma gangrenosum while he was inpatient.

Discussion: We report a challenging case of MAS and pyoderma gangrenosum in a patient with a history of JIA. MAS is a rare syndrome of unknown incidence and variable clinical presentation that can be difficult to diagnose early. It can be triggered by bacterial and viral infections, or even new medications. MAS can cause spontaneous bleeding, bruising, hepatic dysfunction, lethargy, seizures, coma, or shock. Diagnostic criteria include elevated ferritin, fever, low platelet count, and elevated AST. There is a 10% association of acquired MAS with systemic onset JIA. Although pyoderma gangrenosum is not associated with MAS, and is more likely to be associated with JIA, 25% of MAS patients present with some form of skin lesion.

18) CUTANEOUS AND BONE BLASTOMYCOSIS IN AN OTHERWISE HEALTHY PATIENT

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Case Description: A 53-year-old female presented with a black, patchy lesion under her eye that had been present for about 3 months. It first began as a cyst that was drained and scabbed over with occasional pain. As the pain persisted, she presented to an outside hospital and was given a dose of IV Clindamycin and later transferred to our hospital for further evaluation. Here, she received Unasyn and ophthalmology, ENT, and dermatology were consulted. Biopsy of the lesion showed broad based buds, consistent with blastomycosis. Infectious disease recommended starting IV Amphotericin, and surgery on her maxillary sinus for concern of spread of the infection. However, she needed to go home to care for her daughter and agreed to return in a couple of days for the surgery. On her arrival back, vitals were stable, and exam again showed this same lesion under her eye as well multiple pruritic lesions on her legs that had started at the same time, consistent with lesions typically seen in cutaneous blastomycosis. The rest of her exam was benign, and initial blood work was negative. MRI showed no spread of the infection to the CNS. Surgery of her sinus revealed osteomyelitis and a subperiosteal abscess. With concern for disseminated infection, IV Amphotericin was started. She was discharged with a plan for daily IV Amphotericin for 1 week, as well as oral Itraconazole for 12 months.

Discussion: This is a case of cutaneous blastomycosis complicated by maxillary osteomyelitis and a periosteal abscess in a patient without a clear exposure history. A patient's pulmonary presentation can range from acute pneumonia with productive cough, fever, and dyspnea to acute respiratory distress syndrome due to diffuse pneumonitis. Skin lesions are typically verrucous, ulcerative, or nodular. Osteomyelitis may present with soft tissue swelling and a chronic draining sinus tract. With the proper treatment, most patients are able to make a full recovery. However, mortality rates range from 4-22%. In this case, we highlight the importance of considering blastomycosis, particularly in the setting of pulmonary, skin, and bone infections.

19) DECISION-SUPPORT TOOLS AND PROVIDER EDUCATION IMPROVE COMMUNITY HOSPITAL BRONCHIOLITIS CARE

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Introduction: *Abbreviations- ED: emergency department, CXR: chest x-ray, CPG: clinical practice guideline, LOS: length of stay*

Bronchiolitis is one of the most common reasons for pediatric hospitalization, but children often receive unnecessary testing and treatments beyond those recommended by the AAP guideline. Our objective was to assess whether ED and inpatient bronchiolitis decision-support tools reduce use of 1) ED albuterol 2) inpatient albuterol 3) ED CXR.

Methods: Data were gathered via IRB-exempt retrospective chart review at a community hospital (general ED, 14-bed pediatric unit). Included patients were ≤24 months old with bronchiolitis discharge diagnosis and no underlying cardiac, neuromuscular or pulmonary disease. Patients with prior wheeze, but no reactive airway disease diagnosis were included. Two years of baseline data were collected. 3 decision-support tools were created and taught to ED/inpatient teams: a combined ED/inpatient bronchiolitis CPG, inpatient bronchiolitis note template containing management guidelines, and an ED order-set with management guidelines. Baseline rates of ED and inpatient albuterol, ED CXR, transfer to tertiary children's hospital and ED and inpatient LOS were compared to rates immediately post and 6 months post intervention ('maintenance'). Fisher's Exact Test used for variables expressed as rate and Wilcoxon Rank Sum Test for those expressed as mean.

Results: 46 baseline patients were compared to 14 patients immediately post intervention and 23 maintenance patients. Patient demographics were similar. Immediately post intervention, ED albuterol ($p=0.06$), inpatient albuterol ($p=0.05$) and ED CXR ($p=0.31$) use all decreased. Maintenance ED and inpatient albuterol and ED CXR rates were higher than immediately post intervention, but remained below baseline ($p=0.32$, 0.41 and 0.16 respectively). ED and inpatient LOS decreased significantly immediately after intervention ($p=0.03$ and 0.006 respectively). Maintenance inpatient LOS remained significantly decreased ($p=0.04$). Transfer rate did not significantly change immediately or during maintenance phase.

Discussion: Decision support tools reduced unnecessary bronchiolitis care (ED and inpatient albuterol and ED CXR use) while reducing ED and inpatient LOS. Some improvements were not statistically significant due to small sample size and seasonal variation. Full effect of interventions was not sustained at 6 months due to need for ongoing community ED and inpatient pediatric collaboration, including education for new team members.

20) A TALE OF BAD LUCK: AMIODARONE-INDUCED THYROTOXICOSIS FOLLOWED BY METHIMAZOLE-INDUCED AGRANULOCYTOSIS

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Amiodarone-induced thyrotoxicosis is seen in 3% of patients in North America. The highly lipophilic drug concentrates in the thyroid, leading to thyroid dysfunction. Hyperthyroidism is often treated with methimazole, which can induce life-threatening agranulocytosis in 0.2-0.5% of patients.

A 78-year-old female presented to the emergency department with abdominal pain, lethargy, and intermittent hot/cold intolerance. She had a past medical history notable for paroxysmal atrial fibrillation with rapid ventricular response, anticoagulated on warfarin, and hypertension complicated by amiodarone-induced hyperthyroidism diagnosed two months prior. At that time, her amiodarone was discontinued and she was treated with methimazole 20mg three times daily and prednisone 20mg daily. However, she continued to have elevated free T4. At the time of her hospitalization, she was noted to have a fever of 101.8°F with tachycardia, hypertension, and tachypnea with a POx of 96% on room air. Her physical exam was unremarkable. A complete blood count revealed a leukopenia (1,800 cells/μL, 1% neutrophils) and her chest x-ray and CT abdomen/pelvis were negative for abnormalities. Her ECG showed atrial fibrillation with rapid ventricular response. She was given diltiazem bolus followed by continuous infusion for rate control and she received empiric antibiotic coverage with piperacillin/tazobactam. For closer monitoring, the patient was transferred to the ICU where she was started on stress dose steroids and an oral beta blocker to transition off of the diltiazem drip. Methimazole was discontinued. Endocrinology and hematology were consulted. Presenting blood cultures were positive for Klebsiella, so antibiotic was switched to cefepime. She was also started on daily granulocyte colony stimulating factor injections for her neutropenia. The patient was diagnosed with agranulocytosis due to methimazole and amiodarone-induced thyrotoxicosis. Due to her immunocompromised status, she was not an optimal candidate for surgery at that time. She was monitored for potential thyroid storm but fortunately did not develop this complication. Following a protracted two-week hospitalization, the patient was discharged home with a plan for outpatient elective thyroidectomy.

This case highlights the management of a patient who presented with two consequent rare medication side effects: amiodarone-induced thyrotoxicosis followed by methimazole-induced agranulocytosis. Timely diagnosis of these side effect profiles and prompt discontinuation of offending is critical for optimal prognosis.

21) THE EYES CANNOT SEE WHAT THE MIND DOES NOT KNOW- ENDOCRINOLOGICAL SIDE EFFECTS OF IBRUTINIB

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Introduction: Over the last 7 years, ibrutinib has been given US Food and Drug Administration approval for an increasing number of indications ranging from chronic lymphocytic leukemia (CLL), marginal zone lymphoma, and Waldenstrom macroglobulinemia.

Case Presentation: An 85-year-old gentleman with a history of CLL who had been treated with ibrutinib over 6 weeks developed a rash and progressive weakness. He was ultimately admitted to the hospital for obtundation. He was hypotensive, hyponatremic, and hypothyroid on arrival. Despite extensive testing and treatment, he remained unimproved for many days. Results of an adrenocorticotropic hormone stimulation test indicated that the patient had secondary adrenal insufficiency. He was treated with cortisol and his symptoms subsequently resolved.

Discussion: Previous studies have demonstrated the presence of endocrine dysfunction such as adrenal insufficiency, thyroid dysfunction, hyperparathyroidism, and gonadal failure in tyrosine kinase inhibitors such as sunitinib and imatinib. There is a paucity of literature reporting the association of such endocrine adverse effects with ibrutinib. The case highlights the importance of spreading awareness amongst clinicians of potential side effects that can occur with targeted therapy such as ibrutinib. This in turn will facilitate prompt recognition and early management when such cases arise in a hospital setting.

22) STATIN-INDUCED NECROTIZING MYOSITIS, A RARE COMPLICATION FROM A COMMON MEDICATION

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Introduction: Statin-induced myalgia is a relatively common side effect of this drug class that can affect between an estimated 2-11% of patients. However, statin-induced necrotizing myositis is a much rarer complication that affects only approximately 0.5% of patients on statin therapy and produces both subjective and objective findings.

Case: A 66-year-old female with hyperlipidemia and elevated liver enzymes presented from rheumatology clinic, where she was seen for suspected necrotizing autoimmune myopathy. The patient had been started on atorvastatin in 2017 for hyperlipidemia and subsequently was found to have elevated liver enzymes in January 2019 and so atorvastatin was discontinued. She was subsequently started on rosuvastatin in November 2019 and shortly after the patient reported having weakness in both her upper and lower extremities and difficulty with walking up stairs. Rosuvastatin was discontinued in December 2019, but the patient continued to have weakness. Serum test was positive for HMG-CoA reductase antibodies and a biopsy of her right vastus lateralis showed non-specific necrotizing myopathy consistent with autoimmune necrotizing myositis. The patient was admitted in January 2020 with an elevated CK of 4896 U/L and IV methylprednisolone and mycophenolate mofetil were started. There was a subsequent downtrend in repeat CK measurements with symptomatic improvement. The patient was later discharged on mycophenolate mofetil treatment with rheumatology follow-up.

Discussion: Statins are some of the most commonly prescribed medications in the United States and it is common knowledge by healthcare providers that these medications can cause myopathy, albeit this is typically subjective rather than an objective finding. However, this case demonstrates the rare case of necrotizing myositis that can have objective findings and lead to substantial detriment to patients, even when appropriate treatment is initiated. Although rare, clinicians should consider this diagnosis in patients with recurrent failed statin trials with objective CK lab elevations and subjective complaints of muscle weakness.

23) IDIOPATHIC ACQUIRED FACTOR V INHIBITOR

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Introduction: Acquired Factor V inhibitor is an extremely rare condition that can manifest as a spectrum from asymptomatic to bleeding events that lead to death. Once the diagnosis is established with inhibitor studies, therapy aims at elimination of the antibody via immune regulatory therapy of corticosteroids alone or with cyclophosphamide or other immunosuppressants.

Case: An 80-year-old caucasian female presented to the hospital from her primary care physician for an INR >10 and epistaxis for roughly 24 hours that would not resolve. The patient was previously seen a month earlier by podiatry for left hallux total nail removal and was prescribed cephalexin 500mg BID for 7 days. No topical thrombin was used during the procedure. Epistaxis was treated in the ED with intranasal afrin. Patient developed multiple echymoses, with a large echymosis on her right breast that increased in size over the course of her first week of hospitalization. Patient was given multiple Vitamin K administrations during her admission; she received a total of 17.5mg oral solution, 10mg subcutaneous injection, and 10mg IV with continued INR > 10, PT >90, and PTT >139. Patient did not respond to the infusion of prothrombin complex concentrate. Mixing studies performed did not completely correct patient's PT/PTT, suggesting an inhibitor was present. Diagnosis was confirmed when evaluation of inhibitors revealed a Factor V inhibitor. The patient was started on daily prednisone 100mg and a total of four weekly infusions of rituximab. The patient was discharged from the hospital with close follow-up with the hematology clinic and continued immunoregulatory therapy.

Discussion: Acquired Factor V inhibitor is an incredibly rare condition, with only 150 reported cases worldwide by 2006. This condition is associated with antibiotics (of which cephalosporins are named), autoimmune conditions, and cancers. Diagnosis of this condition relies on clinical suspicion and proper interpretation of coagulation studies, especially once initial therapy with Vitamin K and PCC are ineffective. Early diagnosis and treatment of acquired factor V deficiency is imperative as it can lead to fatal bleeding events that are difficult to control. This case highlights the importance of proper treatment of elevated INR and clinical acumen to properly diagnose this rare condition in a timely manner.

24) NON-TRAUMATIC RHABDOMYOLYSIS DUE TO CHRONIC MEDICATION USE

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Introduction: Rhabdomyolysis is characterized by muscle necrosis and release of intracellular contents into the bloodstream. Complications include muscle pain, weakness, electrolyte abnormalities and acute kidney injury (AKI). The causes of rhabdomyolysis are divided into three categories—traumatic or muscle compression, non-traumatic exertional, and non-traumatic non-exertional.

Case Description: RE is a 56-year-old male with history of gout, hemorrhoids, hyperlipidemia (HLD), and alcohol use disorder who presented with hematochezia. His hematochezia lead to minimal blood loss with stable hemoglobin and was likely due to internal and external hemorrhoids, which were later visualized on colonoscopy. On initial workup, his Creatinine (Cr) was 6.41 mg/dL, elevated from a prior value of 0.98mg/dL. During admission interview, patient reported taking colchicine daily for gout. Due to reduced renal function, colchicine was held on admission. On review of systems (ROS), patient endorsed bilateral leg weakness and calf tenderness. A creatine kinase (CK) level was obtained given his positive microscopy. CK was found to be 41,140 unit/L, and urine microscopy showed renal tubular epithelial cells consistent with acute tubular necrosis. The patient had not experienced recent traumatic injury or muscle compression, nor did he have marked exertion prior **to** presentation. Thorough medication review revealed patient was also on atorvastatin daily for HLD. Surprisingly, the underlying cause of this patient's rhabdomyolysis and AKI was due to concomitant use of colchicine and atorvastatin. Both medications were discontinued, and the patient was managed with IV fluids and serial labs. His lab findings and physical symptoms improved, and he was discharged with Cr 0.98 mg/dL and CK 2484 unit/L. One month later at nephrology follow-up, his creatinine remained normal and CK improved to 39 unit/L.

Learning Points: Typically, rhabdomyolysis is considered in the setting of traumatic injury or after high-exertional activities such as running a marathon. This case demonstrates a case of non-traumatic non-exertional rhabdomyolysis induced by prescription medications. While certain medications are known to increase risk of developing rhabdomyolysis, they can be easily overlooked. It is important to consider rhabdomyolysis in the differential diagnosis of AKI even in the absence of typical causes. Additionally, it is imperative to take a thorough medication history to assess for medication interactions and potentiation of toxic muscle side effects.

25) PREDICTION OF AKI IN INPATIENT GENERAL MEDICAL WARDS

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Purpose: Acute kidney injury (AKI) is common in hospitalized patients (A). A few scoring systems have been proposed to predict the risk of developing AKI in certain populations such as cardiac catheterization patients (B, C, D, E, F). However, there is no scoring system for predicting AKI in patients on the general medical wards. Our aim is to predict the development of AKI in acute general medical patients.

Methods: Retrospective single center study of all adult patient admitted to a tertiary care university hospital between July 2016-July 2018. AKI was defined by the KDIGO definition of AKI and all stages of AKI were included. We used chi-squared tests, ANOVA, and Kruskal Wallis to determine statistically significant factors. We calculated odds of AKI using logistic regression models. All analyses were conducted using STATA SE 15.

Results: A total of 10,981 were included in the study, 1573 (14.3%) with AKI and 9408 (85.7%) without AKI. Baseline demographics were significantly different between the two groups including age, race, length of hospital stay ($p<0.001$). In the univariate analysis, history of cancer and diabetes, proteinuria, admission BUN, hemoglobin (HGB), and hypotension during admission were predictive of AKI. After adjustment for significant univariate factors, age (OR 0.97 [0.96–0.99], $P<0.001$), admission BUN (OR 1.02 [1.01–1.04], $P<0.001$), and HGB (OR 0.79 [0.73–0.85], $P<0.001$) were significant in the multivariate analysis.

Conclusions: We found that the age, admission BUN, and HGB were predictive of AKI in inpatient general medical units. These criteria can be used in acute general medicine patients to create a scoring system to determine the likelihood of developing AKI and therefore prevent AKI and its downstream complications in these patients.

26) SEVERE RECURRENT PNEUMONIA DUE TO PARAINFLUENZA AND RHINOVIRUS INFECTION

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Viral etiologies of severe lower respiratory tract infection have become more recognized given improved diagnostic lab capability, and especially now in the setting of SARS-COV-2 pandemic.

A 61-year old woman presented to an emergency department for evaluation of worsening dyspnea and generalized malaise. Her medical history is notable for chronic lymphocytic leukemia (originally diagnosed and treated 8 years prior to presentation, found to have recurrence and last treated with chemotherapy 6 months prior to presentation), recurrent pneumonia, IgG deficiency, atrial fibrillation, and type 1 diabetes. The patient was found to have dyspnea, fever, and bilateral diffuse ground glass opacities on CT scan of the chest. She was admitted and initially diagnosed with and initiated on treatment a presumed bacterial or atypical pneumoni. Her respiratory status declined over the next 36 hours and she was subsequently transferred to a tertiary medical center for further evaluation and treatment. Her antibiotic regimen was escalated to include gram negative coverage and pneumocystis pneumoniae. The patient's respiratory status continued to worsen – requiring endotracheal intubation and mechanical ventilation. She underwent bronchoscopy. An extensive infectious investigation returned notable only for parainfluenza and rhinovirus isolated on nucleic acid amplification assay from bronchoalveolar lavage. Antibiotics were deescalated and discontinued as additional data from microbial workup returned negative. The patient was treated supportively and improved clinically; she was discharged two weeks after admission.

This patient was predisposed to atypical infection given her immunocompromised state of health. She has had two similar though less severe presentations within the 6 months prior. The only identified triggers for this patient's pathologic presentation were viral infections. This case serves as reminder that continued study related to primary viral lower respiratory tract infections and bacterial with viral co-infection should continue as their contribution to patient morbidity and mortality are not as well known.

27) WEEKS OF WEAKNESS- AN UNEXPECTATED CASE OF DUAL DIAGNOSIS

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Introduction: There is a broad differential for patients presenting with weakness. True weakness can be categorized as focal, bilateral, or generalized, and all classifications contain several life threatening diagnoses. Some of these include central and peripheral CNS pathology, endocrinopathies, botulism, and organophosphate or carbamate poisoning. Further, muscular causes of weakness may include inflammatory disorders such as polymyositis and dermatomyositis. Weakness can be due to one diagnosis or multifactorial requiring multiple modes of treatment.

Case Description: A 69 year old Caucasian woman with a history of strokes, seizure, and atrial fibrillation treated with ablation and amiodarone, presented to clinic with weeks of diarrhea and abdominal pain. On follow up, she developed weakness requiring wheelchair for transportation, dysarthria, drooling, dysphagia, palpitations, lower extremity edema, and poor appetite. She was admitted for further care and on admission, TSH was suppressed at <0.005 with elevated free T3 and T4 and EKG showed reoccurrence of atrial fibrillation. Thyrotoxicosis secondary to a history of amiodarone use was suspected. However, her thyroid abnormalities and symptoms were refractory to two weeks of pharmacologic therapies of methimazole and beta blockers and atrial fibrillation was unable to be controlled. Subsequently, EMG was completed and showed neuromuscular junction disease consistent with concomitant Myasthenia Gravis. All thyroid and neuromuscular junction antibodies were negative. She was treated with five days of IVIG with symptomatic improvement, however within days she had progressive bulbar symptoms and acute metabolic encephalopathy with persistent uncontrolled atrial fibrillation requiring intubation and ICU care. She underwent plasmapheresis for seronegative myasthenic syndrome and thyroidectomy for thyrotoxicosis. Post surgery and plasmapheresis, symptoms improved and she was able to be extubated with tracheostomy. She was discharged to subacute rehabilitation for further treatment and Endocrinology and Neurology follow up.

Discussion: Overall, this patient initially presented with weakness and atrial fibrillation and developed rapidly worsening neurologic symptoms whose work up was suggestive of two separate rare pathologic processes requiring management by multiple medical teams and ultimately surgical intervention.

28) MET WITH METHEMOGLOBINEMIA

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Introduction: Methemoglobin is a dysfunctional form of hemoglobin containing iron in the ferric (Fe^{3+}) rather than ferrous (Fe^{2+}) state. Ferric iron impedes hemoglobin's ability to release oxygen into the tissues and causes functional anemia. This means the amount of measured globin protein in the blood may be normal, but it lacks the operative capacity to provide adequate oxygenation.

Case Description: A 91 year old woman with a history of COPD was recently diagnosed with giant cell temporal arteritis and started on combination therapy with high dose corticosteroids and dapsone. Shortly after beginning treatment, she presented to an urgent care clinic complaining of shortness of breath. The patient's daughter brought her in after being concerned about the patient's oxygenation status at home. She reported that the patient had been consistently desaturating to 88% on room air. Urgent care recommended the patient be seen at the Froedtert Hospital Emergency Department, where she was started on 4 liters of oxygen. Her oxygen saturation improved to remain stably above 90% and she was admitted to the medical floor. On initial evaluation, the patient was considered to have a refractory exacerbation of her existing COPD, causing a decrease in her functional baseline. It was noted, however, that she had no prior history of smoking, nor had she ever been exposed to significant amounts of secondhand smoke. Exacerbation by infectious or metabolic etiologies were considered, but her workup returned negative. The patient was discharged on home oxygen with DuoNeb and methylprednisone, and instructed to follow up outpatient. Days later in office, she underwent pulmonary function testing and received an arterial blood gas analysis which showed methemoglobinemia. Dapsone was the suspected inciting agent. The medication was immediately discontinued and her symptoms dramatically improved. She no longer needed oxygen supplementation. Her immunosuppression regimen was adjusted by adding tocilizumab and tapering steroids.

Discussion: Dapsone is used to treat a variety of autoimmune and dermatologic disorders. It also happens to be one of several drugs which cause methemoglobinemia, particularly in patients susceptible to oxidative damage due to glucose-6-phosphate dehydrogenase deficiency. Medication review should be done in patients presenting with signs of methemoglobinemia.

29) CLINICAL SUSPICION IN MANAGING GIANT CELL ARTERITIS

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Introduction: Giant cell arteritis (GCA) is a medical emergency that must be immediately treated to avoid vision loss, which can occur in 20% of patients. GCA often presents as transient vision loss with systemic symptoms like jaw claudication, headaches, and myalgias.

Case: A 71-year-old female with a past medical history of hypertension, hyperlipidemia, and diabetes mellitus presented with a 15-minute painless episode of transient monocular right sided vision loss. She was slightly hypertensive and endorsed bilateral jaw claudication but she denied floaters/flashing lights, blurred vision, headache, myalgias, or trauma. No focal neurological deficits were noted. Ophthalmologic exam showed no abnormalities. A CT with contrast revealed atherosclerosis in the large neck arteries with no large vessel occlusion; however, the right ophthalmic artery was asymmetrically decreased. The initial diagnosis was amaurosis fugax, but symptoms of jaw claudication combined with subsequent labs showing elevated ESR (75) and CRP (1.91) gave high clinical suspicion of GCA. To preserve vision, we gave 1g IV methylprednisone for 3 days followed by oral prednisone 1mg/kg. Temporal artery biopsy confirmed clinical suspicion 5 days after initial presentation/treatment.

Discussion: Here we report a case of GCA, where clinical intuition preserved a patient's vision. Early diagnosis of GCA is imperative as it progresses to bilateral blindness in 50% of untreated cases. The earliest presenting symptom of GCA is transient vision loss, which precedes permanent blindness by weeks. As a result, any patient over 50 years old with transient vision loss should be worked up for GCA. Elevated ESR and CRP are two key lab findings that can aid in the diagnosis of GCA; these markers have a sensitivity of 84% and 86% respectively in biopsy confirmed cases of GCA. The presence of elevated inflammatory markers and systemic symptoms should prompt immediate glucocorticoids to prevent vision loss. Current guidelines recommend treating with 1g/day IV methylprednisone for 3 consecutive days followed by 1 mg/kg oral prednisone until symptoms subside and a gradual steroid taper can begin. After starting glucocorticoids, a temporal artery biopsy should be performed: a positive biopsy with elevated ESR/CRP has a sensitivity of 97%. Additionally, a negative biopsy result does not rule out GCA, so a repeat biopsy is indicated for high clinical suspicion. Despite the fear of permanent vision loss in GCA, early diagnosis based on clinical suspicion and inflammatory markers combined with acute treatment remains the standard of care to prevent irreversible complications.

30) VARIANT LEMIERRE'S SYNDROME IN IMMUNOCOMPETENT PATIENT WITHOUT PERIODONTAL OR PREVIOUS GI PATHOLOGY

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Introduction: Fusobacterium is a gram negative nonsporulating anaerobe needle shaped bacterium indigenous to the oral cavity. They are invasive, thrombogenic, commonly associated with the rare Lemierre's syndrome. This is a thrombophlebitis of the internal jugular associated with periodontal abscess and almost universally associated with F. necrophorum (1), with F. nucleatum associated with immunocompromised patients.(2) There are scattered case reports of hepatic abscess with F. necrophorum. .(1,2,3,4,5,6,7,8) Here we present a case of an immunocompetent patient, without periodontal risk factors with a F. nucleatum abscess and associated portal vein thrombosis. **Case:** The patient is a 69 yo woman initially evaluated for RUQ pain and incidentally noted portal vein thrombosis on CT imaging without initial hepatic pathology. On follow up 2 weeks later her symptoms had progressed to swinging fevers, chills, malaise, and weakness a leukocytosis of at wbcs at 16.7 x 10^3/ uL and Hb of 12.1 g/dL. Repeat imaging with MRI abdomen showed progression of portal vein thrombus 2 hepatic lesions measuring 1.5 and 2.2 cm. A liver biopsy was performed with results showing purulence with culture result positive for F nucleatum. Initial antibiotics of ceftriaxone, metronidazole and vancomycin were narrowed to Unasyn upon culture results and then ertapenem upon sensitivity results for 2 more weeks. The patient had progressive improvement in symptoms. She was appropriately anticoagulated for 6 months and saw complete resolution of presenting symptoms.

Discussion: Fusobacteria related thrombophlebitis has long been relegated to periodontal disease and although there are sporadic cases of liver abscesses related to fusobacterium nucleatum the great majority are caused by Fusobacterium necrophorum and present with a septic picture. To the best of our knowledge there have been 8 other case reports of Fusobacterium nucleatum pylephlebitis.(1,2,3,4,5,6,7,8) Additionally, 6 of these were seen after abdominal instrumentation, or following oropharyngeal infection and/or were immunocompromised. This case illustrates a more indolent presentation of the rarer bacterium presenting in an immunocompetent patient without recent oropharyngeal infection, or GI pathology or instrumentation.

31) TREATMENT OF SEVERE FROSTBITE WITH DELAYED SYSTEMIC TPA

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Severe frostbite has a high risk of complications and morbidity and is associated with amputation rates near 100 percent (1) Pathogenesis of severe frostbite is characterized by cellular lysis from ice crystal formation progressing to an inflammatory cascade and venous thrombosis. Reperfusion injury after warming leads to further endothelial damage, inflammation, and tissue ischemia.(2) Treatment with tissue plasminogen activator (tPA) has been shown to reduce loss of limb if given in the first 24 hours.(1) However, it is not yet standard of care.(3) We present a case of severe patient for whom treatment was initially limited to early rewarming. The patient received delayed TPA (still within the 24 hr window) and had recovery of both sensation and perfusion without loss of limb.

Case: A 56 year old man with acute alcohol intoxication was found unresponsive (GCS of 11) in 4 degF weather for > three hours. On initial assessment, skin was dusky with multiple abrasions. Core body temperature was 79.9 degF, other vitals were stable. Blood alcohol level was 290 mg/dL, lactate of 6.4 mmol/L and CPK 739 units/L (peak of 1842 units /L). Rewarming treatment included: Bair-Hugger, warmed IVF, humidity with mechanical ventilation, and electrolyte replacement. He was extubated and conversant within eight hours. Dispute normothermia, his limbs continued to become more dusky, cyanotic, blistered with purple PIP joints, and lacked capillary refill. Sensation was markedly reduced to absent on all digits. Radial pulsation and pulses at the bases of the fingers were intact. TPA was started between 22 and 25 hours after patient's initial fall, with a bolus of 0.15mg/kg follow by 0.15 mg /kg over 6 hrs followed by heparin for 3 days and Lovenox for 30 days.(4) Within 12 hours, Patient had recovery in sensation and perfusion of limbs. Serial wound debridement was required, but not amputation. Hospital course was complicated by a GI bleed on hospital day four.

Severe frostbite is associated with high risk of complication and morbidity even in cases of early intervention defined as within the first 24 hours of the event. Use of tPA has been shown to reduce the incidence of amputation and morbidity associated with severe frostbite. This case demonstrates that, even with delay in use, tPA may be beneficial. Since this patient was treated 22-24 hours post-event, tPA may also be beneficial beyond the current recommendation of 24 hours. Future research is needed to determine optimal tPA dosing and timing of therapy.

32) ESOPHAGEAL VARICES AND ASCITES SECONDARY TO ARTERIOPORTAL FISTULA

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Introduction: While cirrhosis and portal vein thrombosis account for nearly 97% of all cases of portal hypertension in the United States, the list of conditions known to cause portal hypertension are numerous. We report a rare cause of portal hypertension arising from an intrahepatic arterioportal fistula presenting as bleeding esophageal varices and ascites.

Case Description: A 72-year-old woman with a history of moderate alcohol use and remote cholecystectomy developed abdominal distention, melena, lightheadedness and dyspnea on exertion and was found to have new-onset ascites and multiple bleeding esophageal varices. Serial attempts at banding were unsuccessful with recurrent melena and subsequent anemia, prompting referral for TIPS. Abdominal imaging revealed an atypical liver morphology with an enlarged left and diminutive right hepatic lobe; the portal vein was patent with enlargement of both the left and right segments. Review of a previously obtained CT angiogram of the chest showed early enhancement of the portal vein during the arterial phase of the study. This finding in the absence of obvious risk factors for cirrhosis raised suspicion that vascular abnormalities, rather than intra-sinusoidal disease, might potentially be responsible for the patient's symptoms. Evaluation by angiography demonstrated an accessory right hepatic artery arising from the SMA that gave rise to a single communicating branch with the right portal vein. Subsequent embolization of the fistula led to the resolution of the patient's ascites and bleeding varices; follow-up imaging showed no recurrence in communication between the arterial and portal venous system.

Discussion: While rare, arterioportal fistula is a known cause of portal hypertension. Congenital malformations have been implicated, as have acquired arteriovenous communications arising from neoplasm, traumatic injury (including liver biopsy, biliary surgery and blunt trauma), cirrhotic disease, and vascular dysgenesis.

33) AIDS CHOLANGIOPATHY

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Patient is a 44 year old male with a past medical history significant for self-reported mental health disturbances (bipolar affective disorder, schizophrenia, antisocial personality disorder and post-traumatic stress disorder), alcohol use and untreated AIDS complicated by a recent diagnosis of pneumocystis pneumonia, who presented to the emergency department with a 2 month history of abdominal pain associated with nausea and anorexia. On the day of admission, the patient also reported three episodes of emesis and diarrhea. Physical exam was notable for abdominal distention and diffuse tenderness with voluntary guarding. Chemistries showed a WBC of 4.7 with normal chemistries and cholestatic picture of liver injury with AST 40, ALT 81, Alkaline Phosphatase 597, Total Bilirubin 0.3, GGT 914. CT abdomen and pelvis with IV contrast showed common bile duct dilation up to 17mm without stones identified. Patient underwent ERCP with sphincterotomy and temporary stent placement with bile duct brushings. Unfortunately, post-ERCP he developed a fever to 38.4 and was started on vancomycin, metronidazole and aztreonam with elevated lipase to 622 consistent with post-ERCP pancreatitis. Later his HIV RNA viral load was found to be 4,441,681 with HIV RNA log 6.65 and a CD4 count that was undetectable. After much debate, the patient made his wishes known: his goals of care were to continue to be treated for opportunistic infections associated with AIDS, but declined ART. He was treated for AIDS cholangitis with a seven-day course of antibiotics and continue to refuse ART treatment after discharge.

This is an interesting case for a variety of reasons. First, the differential and workup for abdominal pain in patients with AIDS is compelling. Second, AIDS-cholangiopathy is a unique diagnosis, rarely encountered. Lastly, this case raises interesting ethical dilemmas regarding treatment of life-threatening conditions (opportunistic infections) and non-life threatening conditions (AIDS) in a non-compliant patient.

34) LEMIERRE SYNDROME – A CHALLENGING DIAGNOSIS AND COURSE

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Introduction: Suppurative thrombophlebitis of the internal jugular vein, also known as Lemierre syndrome, is an uncommon condition primarily affecting healthy young individuals. In most cases it is preceded by a sore throat or other infection of the head and neck that spreads to involve the carotid sheath vessels.

Case Description: The patient is a 33 year-old male who presented with bilateral ear pain, sore throat, fevers, chills, and a cough with some sputum for seven days. He was previously healthy with no significant past medical history. He was discharged home with a diagnosis of viral illness after that initial visit. Three days later he presented to the ED again due to respiratory distress, dysphagia, and disequilibrium. At that time he was febrile with tachycardia and tachypnea. Lab values were significant for severe thrombocytopenia, leukopenia, and acute kidney injury. Imaging studies showed pneumonia of the right lower lobe. Blood cultures were obtained. He was transferred to the MICU two days after admission due to increasing respiratory distress, platelet count not improved after platelet transfusion, tachycardia, and tachypnea. He was intubated during a rapid response event. Four days after admission, blood cultures were positive for *Fusobacterium necrophorum*. At this point Lemierre syndrome was suspected and the patient was started on Zosyn. A CT with contrast was delayed due to acute kidney injury but did reveal a thrombus in the internal jugular vein for which anticoagulants were started. Six days after admission the patient was extubated and began a prolonged recovery period in the hospital.

Discussion: Here we present a case of Lemierre syndrome to increase awareness of this diagnosis among clinicians. It is unclear from this patient's history what led to his LS, but the presence of *Fusobacterium* in culture is highly suspicious for the syndrome. *Fusobacterium* is part of the normal oral flora but is implicated in some cases of pharyngitis and tonsillitis. Due to the infection of the internal jugular vein the carotid sheath vessels should be evaluated for thrombi with a CT with contrast. However, this patient also presented with acute kidney injury preventing the use of contrast. Renal impairment is a potential complication in LS possibly due to septic emboli. The patient's blood counts may be attributed to overwhelming infection, but there is an association between LS and consumptive coagulopathy. LS should be suspected whenever a patient with pharyngitis fails to improve on standard therapy or becomes markedly worse, as was the case with this patient.

35) ATYPICAL PRESENTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS

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Introduction: Systemic lupus erythematosus (SLE) is a chronic multisystem autoimmune disease that can present with various clinical features. Alternative diagnoses must be excluded prior to considering SLE as it can resemble other disease processes.

Case: A 42-year-old male with a history of vitiligo and insulin dependent diabetes mellitus (IDDM) on insulin therapy with a family history of SLE in his half-sister presented to the hospital with complaints of 2 weeks of lymphadenopathy (LAD) in the subauricular, submandibular, and submental regions, 3 month weight loss, fever, dry cough, weakness, and 5 days of a diffuse macular erythematous rash that was pruritic but not painful. As his symptoms progressed, he became increasingly fatigued to the point where ambulating was difficult. Remaining 10-point review of systems were negative. On presentation, the patient had acute kidney injury (AKI) and was noted to have diffuse LAD on computed tomography chest abdomen pelvis (CT CAP) concerning for a lymphoproliferative disorder. Additional testing showed a normocytic anemia with a hemoglobin of 10.2 g/dL, lactate dehydrogenase (LDH) of 595 unit/L, ferritin elevated to 1,857 ng/mL, alkaline phosphatase elevated to 514 unit/L, and 1+ protein on urinalysis. Liver biopsy was normal and inguinal lymph node biopsy was benign. Skin rash biopsy was concerning for vasculitis with an immunofixation electrophoresis (IFE) positive for C3 and IgM. Immunological work-up revealed an antinuclear antibody (ANA) titer of 1:320 and speckled, erythrocyte sedimentation rate (ESR) >119 mm/hr, low C3 of 75 mg/dL, normal C4, positive direct antiglobulin test (DAT), positive myeloperoxidase (MPO), and negative proteinase 3 (PR3). The patient was started on prednisone 60 mg daily, which was decreased to 40 mg daily prior to discharge. Diagnostic considerations at the time of discharge included systemic vasculitis, adult-onset still's disease, and SLE.

Discussion: After thorough work-up, including skin and lymph node biopsy, it was determined that his most likely diagnosis was SLE based on positive ANA, decreased C3, cutaneous vasculitis, reactive LAD, and proteinuria which resolved with steroid administration. SLE can be difficult to definitively diagnose because it can resemble other medical conditions.

36) RARE DIAGNOSIS OF PANCREATITIS SECONDARY TO FAMILIAL TRIGLYCERIDEMIA

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Introduction: Hypertriglyceridemia is the underlying cause of up to 7% of all cases of pancreatitis and genetic factors determine 60% of the variations in plasma lipid levels of an individual. In many cases, determining the exact cause of pancreatitis is complicated by the role of ethanol in precipitating severe hypertriglyceridemia.

Case Description: A 23 year old with past medical history significant for polysubstance abuse who presented with acute onset abdominal pain. Patient denied symptoms of nausea and vomiting. He denied any history of abdominal surgery or any recent alcohol use. On physical exam, patient was ill appearing and had abdominal tenderness in the epigastric area. There was guarding. Other components of the physical exam were normal.

His laboratory tests on admission revealed elevated White Blood Cell count of 18.7 10e^3/uL with an absolute neutrophil count of 13.65 10e^3/uL, a glucose of 120, and liapse of 139. Due concerning laboratory levels, a CT abdomen and pelvis with contrast was done in the emergency department. The CT scan showed mild inflammation of the head and proximal body of the pancreas. The patient was admitted to the floor and did not keep anything by mouth. He was treated with intravenous fluids, and dilaudid for pain control. Next morning patient's abdominal pain had improved slightly and was advanced to clear diet. Upon consultation with endocrine it was found patient had triglyceride levels of >885 and family history of dyslipidemia. Patient was discharged with fenofibrate and dietary counseling.

Discussion: Familial pancreatitis is an extremely rare ,but important cause of pancreatitis in young adults. Because its clinical features are similar to other etiologies it is imminent that further work up be done in patients with unknown causes of pancreatitis. The diagnosis of familial hypertriglyceridemia is made based on family history and triglyceride levels. This is further divided into mild triglyceridemia 150-199mg/dL and severe triglyceridemia >885mg/dL. He was successfully treated with intravenous fluids, analgesics, and medical management of fenofibrate. Therefore, it is important to evaluate patients from familial predispositions for pancreatitis.

37) INTERPLAY BETWEEN HEMATOLOGY AND CEREBROVASCULAR DISEASE: SNEDDON SYNDROME

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Introduction: Sneddon Syndrome (SS) is a rare, non-inflammatory thrombotic vasculopathy with unknown etiology involving medium- and small-sized dermal and cerebral arteries, respectively. It is characterized by chronic, episodic cerebrovascular events and generalized livedo racemose (LR) in the setting of hypercoagulable state and intrinsic vasculopathy.

Case Description: A 22-year-old male with a history of chronic ITP, MR, and HTN secondary to CKD III-IV presented with worsening AKI (Cr 5.31) to the ED following a lab recheck. The patient was recently admitted for pneumonia, hypertensive urgency, and AKI on CKD with hematuria and bilateral hydronephrosis. On arrival to the ED, the patient was in no acute distress with stable vital signs. Physical exam was notable for tachycardia, tachypnea, and mild RUQ tenderness as well as leukocytosis. CXR notable for worsening pneumonia in the RML & RLL. The patient was admitted for worsening AKI and transferred to the MICU with acute respiratory failure attributed to pneumonia and acutely decompensated HFrEF. A few days later he developed new-onset agitation and unilateral L sided weakness. A brain MRI indicated numerous punctate foci with acute to subacute ischemia within the deep supratentorial white matter. A TEE showed vegetations on the MV and MR. Given the patient's positive IgG cardiolipin antibody, livedo reticularis on examination, CVA, and history of ITP, HTN and CKD, SS-antiphospholipid variant was diagnosed.

Discussion: SS is a rare, progressive condition that is clinically diagnosed and most commonly seen in women of reproductive age. Approximately 80% of SS patients are positive for antiphospholipid antibody marker. While treatment is currently based on anecdotal reports, long-term anticoagulation is recommended for prophylaxis of cerebral ischemic events. The patient described above was heparinized and started on warfarin.

38) INTERVENTION TO MEET THE HEALTH CARE NEEDS OF THE WAUSAU COMMUNITY: MEDICAL OUTREACH CLINIC FOR HOMELESS INDIVIDUALS (MOCHI)

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Purpose: As the only free clinic in Marathon County, the Wausau Free Clinic (WFC) strives to provide personalized, basic and preventative health care services to individuals experiencing homelessness with a goal to minimize the health disparities prominent in this population and mitigate the usage of acute-care services for non-emergent conditions.

Methods: The clinic is facilitated according to the standards of the Wisconsin Association of Free and Charitable Clinics (WAFCC). During each visit, de-identified information was collected via interview regarding patient demographics, presenting concerns, diagnosis/treatment, and insurance status. Patients completed a voluntary post-visit survey to gauge satisfaction, usage of other healthcare facilities, and unmet health care needs. The study was determined quality improvement by the MCW IRB.

Results: A total of 54 visits were completed during the 2019-2020 season. Of these, approximately half (51.85%) represent new patients and less than a quarter (12.96%) female patients with the majority being White men over the age of 50 with insurance (BadgerCare). The majority of visits were completed in January with musculoskeletal and dermatology representing the most common visit diagnoses. Several patients indicated that they did not seek services in the Emergency Department because their main concerns were addressed by the clinic.

Conclusions: The WFC is able to provide basic health care services to individuals experiencing homelessness who would not otherwise seek care. By addressing patient concerns, the clinic prevented the use of acute-care facilities for non-emergent conditions. It is evident that additional support and resources are still needed to mitigate health disparities.

39) PRESCRIPTION MEDICATION DISPOSAL METHODS IN MARATHON COUNTY AMONG THE AGING

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Background: Opioid abuse is a public health priority in Marathon County. Access to expired and/or unused prescription medications are a major source of opioids available for abuse. Medications can be disposed of properly in various ways including permanent drop-box locations and Deterra Pouches, which are single-use bags that deactivate drug ingredients rendering them safe for discard via regular at-home trash disposal. This method may be particularly effective in the aging population, who may have limited ability to access permanent drop-boxes due to travel constraints. The goal of this study was to evaluate current medication disposal methods, while making disposal methods more available to the aging in Marathon County.

Methods: Participants were selected based on being permanent residents of Marathon County who received 'Meals on Wheels' benefits from the Aging and Disability Resource Center of Central Wisconsin. To be considered for 'Meals on Wheels', one must be 60 years old or older and essentially homebound due to illness or disability. There were 175 participants in this study. Participants were provided with Deterra Pouches, infographics about drop-boxes, and a survey. The survey assessed current disposal methods, Deterra Pouch use, and availability of expired medications in the home.

Results: 35.3% of participants had expired and/or unused medications at home. Among the aging prior to receiving Deterra Pouches, taking medications to drop-box locations was the most popular method of disposal (58.1%) followed by throwing in the trash (22.6%) and flushing down the toilet (12.9%). 100% of participants who reported having expired/unused medications at home also reported that they used their provided Deterra Pouch to dispose of said medicines.

Conclusions: Among the aging and disabled in Marathon County, drop-box locations are frequently used for drug disposal. Also, if provided, Deterra Pouches have a very high likelihood of being utilized for disposal as well. Since 41.9% of participants disposed of medications in a way that may be harmful to the environment, themselves, or others, continuing education on safe disposal practices among this population should be considered.

40) WHEN THE PANCREAS ATTACKS: A CASE OF FULMINANT PANCREATITIS IN THE SETTING OF LIRAGLUTIDE ADMINISTRATION

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Introduction: Type II diabetes has become increasingly prevalent among young adults nationwide carrying with it an increased risk of early micro and macrovascular complications, making multifaceted treatment a priority. However, treatment does not come without its own risks including hypoglycemia, pancreatitis, lipid panel abnormalities, and an increased risk of liver and kidney disease.

Case: A 32-year-old African American male with a past medical history of morbid obesity, Type II DM, hypertension, and hyperlipidemia to the emergency department with lightheadedness, abdominal pain, and altered mental status. Initial vital signs were significant for hypotension (82/60 mmHg) and tachycardia (107 bpm). On physical exam, the patient was somnolent with signs of severe dehydration, as well as right upper and lower quadrant abdominal tenderness. Labs were remarkable for blood glucose >1500, lipase of 640, lactic acid of 3.2, venous pH of 7.22, pCO2 of 56, bicarb of 19, anion gap of 29, triglycerides of 622, and a creatinine of 3.59 suggestive of pancreatitis and multi-organ failure. A CT scan of the abdomen without contrast revealed acute interstitial edematous pancreatitis. The patient was admitted to the intensive care unit where he rapidly decompensated requiring endotracheal intubation and vasopressor support. On hospital day 10 the patient was extubated. After time on the medical floor and inpatient rehabilitation, he was eventually discharged home. Following discharge, the patient began experiencing complications related to ischemic necrosis of the lower extremities. Amputation of several digits was performed due to wet gangrene and osteomyelitis. While still struggling to control his glucose levels with insulin and oral medications, the patient has otherwise made a remarkable recovery.

Discussion: Pancreatitis in the United States is most commonly due to alcohol use and gallstones. However, additional causes do exist. Though studies have not been sufficient to definitively determine a link between GLP-1 agonists and pancreatitis, there have been numerous case reports describing adverse events associated with administration of these medications. Reports range in severity from mild epigastric pain to fulminant pancreatitis leading to multiorgan failure and death. This case highlights the importance of looking closely at all causes of pancreatitis in order to prevent recurrence due to reversible causes.

41) ALTERED MENTAL STATUS AND HYPOTHERMIA; A CASE OF MYXEDEMA COMA

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Introduction: Myxedema coma is the manifestation of severe, decompensated hypothyroidism, characterized by; altered mental status, defective thermoregulation hypothermia and a precipitating event.

Case: An 81 year old female with a history of atrial fibrillation, hypertension, chronic lymphedema and 6 year history of acquired hypothyroidism presented with an episode of urinary incontinence followed by confusion. She was reportedly treated the 3 preceding days for a urinary tract infection. Upon presentation the patient was somnolent with a temperature of 33.6° C and trough heart rate of 38 beats per minute. History was significant for the patient's abrupt discontinuation of levothyroxine 125mcg daily due to unwanted adverse effects. Physical exam found bilateral lower extremity non-pitting edema to the tibial tuberosities. Electrocardiogram showed 3:1 atrioventricular nodal block with atrial flutter. Laboratory findings included hyperkalemia of 6.3 mmol/L, thyroid stimulating hormone of 242 mIU/L and free T4 of 0.37 ng/dL with pertinent negative findings being absence of leukocytosis and focal signs of infection with normal chemistries and urinary analysis. Altered mental status, primary hypothyroidism and acute precipitating event meet criteria for myxedema coma. She required external warming with temperature returning to normal after 11 hours. Her hypothyroidism and hypokalemia improved with systemic corticosteroids, fluid resuscitation, and replacement thyroid therapy. Intravenous levothyroxine was administered for 4 days before transitioning to oral; free T4 improved to 0.84 ng/dL by hospital day 4 while TSH did not return to baseline before discharge. Bradycardia with frequent pauses persisted to day 8, she was discharged with a heart rate of 55bpm.

Discussion: We report a case of myxedema coma following abrupt discontinuation of exogenous thyroid replacement therapy in a patient with chronic hypothyroidism precipitated by an acute urinary tract infection. Myxedema coma is estimated at 0.22-1.08 cases per 1 million people. The rarity and insidiousness of this presentation of severe hypothyroidism can lead to delay to diagnosis and appropriate treatment. Patients present with confusion conjugated with lethargy and obtundation in addition to hypothermia, hypotension, bradycardia, hyponatremia, hypoglycemia and hypoventilation. Clinicians should suspect this diagnosis especially with a history of acute infection with or without febrile response and hypothyroidism dependent on exogenous thyroid supplementation.

42) HEALING WOUNDS: INITIAL DIAGNOSIS AND LONG-TERM MANAGEMENT OF CALCIPHYLAXIS IN AN ESRD PATIENT

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Introduction: Calciphylaxis is a rare, intensely painful skin condition commonly associated with end-stage-renal disease (ESRD). Otherwise termed "calcific uremic arteriolopathy," calciphylaxis results in dusky skin discoloration that progresses to dark, malodorous ulcers. The lesions are histologically characterized by calcium accumulation within microvessels of the dermis and subcutaneous adipose tissue. The presence of calciphylaxis portends a poor prognosis, with six-month survival estimated at fifty percent. Wound infection leading to sepsis constitutes the most common cause of death in these patients.

Case: A 40-year-old woman with ESRD status post failed renal transplant on peritoneal dialysis presented to the emergency room with painful, violaceous skin lesions of the bilateral posterior calves. Punch biopsy was obtained, and dermatopathology revealed thrombotic vasculopathy with vascular and soft tissue calcification. While Dermatology did not feel the histology findings were completely consistent with calciphylaxis, the primary and Nephrology teams elected to proceed with calciphylaxis treatment given the the patient's presentation and multiple risk factors. Risk factor reduction was addressed by initiating a phosphate binder, changing the patient's warfarin to apixaban, and discontinuing oral calcium and iron supplements. After tunneled dialysis line placement the patient transitioned to intermittent hemodialysis with three-times weekly sodium thiosulfate infusions. Palliative Care was consulted for symptom management and recommended gabapentin, nortriptyline, and oxycodone. Upon discharge, the patient followed closely with outpatient Palliative Care and Wound Care. Over the course of eight months the wounds gradually improved, and after multiple goals of care conversations the patient transitioned back to peritoneal dialysis.

Discussion: Unlike many cases of calciphylaxis, which are often managed in the intensive care setting, this patient's clinical course highlights the ways in which outpatient providers from multiple disciplines can work together to support patients with this life-altering diagnosis. This case also demonstrates how early Pallitiave Care involvement benefits ESRD patients by addressing symptom management and facilitating ongoing goals of care conversations.

43) IMPROVING SEPSIS CARE THROUGH STRONG MULTIDISCIPLINARY COLLABORATION

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Program Objectives: Identify factors that impede early recognition and treatment of sepsis. Improve compliance with the recommended sepsis care bundle. Measure outcomes as percentage of sepsis care bundle compliance and associated mortality.

Program Description: Early recognition and treatment of sepsis is a major local, state, national, and global challenge. In October 2015, Centers for Medicare & Medicaid Services (CMS) introduced the SEP-1 core measure for adult patients with severe sepsis and septic shock through a sepsis care bundle. At the time, Marshfield Medical Center (MMC) formed the Sepsis Committee to help streamline what is arguably the most challenging core measure introduced by CMS to date (Table 1). MMC is a 500-bed tertiary hospital within the greater Marshfield Clinic Health System (MCHS) located throughout northern central Wisconsin. As the main campus of MCHS, we have continuously identified new barriers to sepsis care bundle compliance and strive to improve. Formation of the Sepsis Committee was the foundation of this project.

Description of Innovation: Sepsis Committee is a multidisciplinary team who, through a collaborative effort, functions to optimize care and improve outcomes for patients with severe sepsis and septic shock (Figure 1). Involvement of key stakeholders facilitated downstream implementations.

Quality Improvement Initiatives: We obtained all SEP-1 patient records through our Quality Department. We analyzed each patient case for the following metrics: (see Figure 2). We then implemented the following: 1) Staff education including computer based training, wall posters (e.g. Figure 3), pocket cards, emails, 2) Implemented automated Sepsis early warning system, 3) Partnering with IT to hardwire EMR order sets to facilitate sepsis identification, ordering the correct labs, imaging and therapies, 4) Ensuring accurate records were kept for fluid administration, 5) Monthly Sepsis Committee meetings for PDSA cycle reviews, 6) Individual department/provider feedback for missed opportunities.

Results: SEP-1 compliance rates proved to have inversely proportional relationship to overall sepsis-related mortality (Figure 4, Figure 5).

Key Lessons: Recognizing and treating sepsis early remains a formidable challenge. Improving our systematic workflow was effective in improving sepsis care bundle compliance and creating a better practice environment for the healthcare team. Excellent sepsis care requires a multidisciplinary and system-based approach. Our findings further validate prior studies, in that higher bundle compliance translates to better patient outcomes. 100% bundle compliance is achievable but not sustainable and should not be the target. A target compliance rate of 80% is reasonable and allows for physician autonomy in cases where applying the bundle might expose the patient to harm.

44) INTERDISCIPLINARY DEPRESCRIBING OF ASPIRIN THROUGH PRESCRIBER EDUCATION AND TARGETED INTERVENTION

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Purpose: To compare current aspirin prescribing to guideline recommendations and to analyze the impact of educational intervention and patient-specific recommendations on subsequent deprescribing trends of inappropriate aspirin use.

Methods: An educational intervention focused on appropriate aspirin use was presented to the providers involved in the study. All patients on aspirin with a clinic appointment during the study period were screened and their charts were reviewed. Aspirin use was classified based on relevant guideline recommendations into the categories recommended, weigh the risk and benefits of aspirin use, not recommended, dose change recommended, and outside of guideline recommendation. The recommendation was then communicated to the provider prior to the patient's appointment. Deprescribing or continuation of aspirin following the appointment was tracked and analyzed.

Results: In this study, inappropriate aspirin use was found to have a point prevalence of 29% in 100 patients prior to their appointment. Of these, aspirin was not recommended in 65.5% and a dose reduction from 325 mg to 81 mg was recommended in 34.5%. Of the 81 patients who kept their appointment, recommendations were communicated to provider to deprescribe inappropriate Aspirin use in 20 patients (24.7%). Of these, there was a rate of deprescription of 55%.

Conclusion: Majority of patients identified as using aspirin inappropriately fall into three categories: 1) patients taking aspirin at doses of 325 mg, 2) patients taking aspirin for primary prevention, and 3) patients taking aspirin concomitantly with an anticoagulant. Strategies that may lead to an optimization of deprescribing aspirin include educational conferences and patient-specific chart reviews. Focus should be on preventative and cardiac related visits. Establishing an interdisciplinary team to audit current aspirin use and promote deprescribing can result in reduction of aspirin use. These efforts are important as reduction of inappropriate aspirin use may lead to reduced bleeding events and improved patient outcomes.

45) COCAINE AND LEVAMISOLE INDUCED VASCULITIS

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Introduction: Cutaneous vasculitis can be caused by a number of distinct etiologies, including cutaneous lupus, meningococcal sepsis, cutaneous squamous cell carcinoma, graft-versus-host disease, thrombotic disorders, angiosarcoma, embolic disease, hematologic malignancies, paraproteinemias, and Stevens Johnson Syndrome. Here, we present a case of acute vasculitis following cocaine use, which we attribute to Levamisole adulterated cocaine associated vasculitis. Due to the high number of distinct etiologies of acute vasculitis, patients with suspected Levamisole adulterated cocaine associated vasculitis require extensive workup to verify the correct diagnosis.

Case Description: A 48 yo non-hispanic white male with past medical history significant for Crohn's Disease and pneumonia presented with acute bilateral ear pain and rash. Following initial assessment, the patient was discharged on empiric antibiotic treatment for presumed otitis media. The patient returned to care two days later with worsening purpuric and tender rash which had spread to his left upper extremity and bilateral lower extremities. The rash showed no signs of blanching. Patient was discharged on prednisone, which was not used. Patient returned to care one day later with no improvement in symptoms and progressive cough. He reported use of crack cocaine prior to initial onset of rash. This was confirmed with a urinary drug screen, which prompted suspicion of levamisole contamination and potential levamisole adulterated cocaine associated vasculitis. Serology supported this hypothesis as both p-ANCA and ANA were positive with values of 1:10240 and 1:160 respectively. MPO was negative with a value of 17 au/ml. A punch biopsy showed evidence of leukocytoclastic vasculitis and multiple fibrin thrombi further supporting contamination with levamisole. After the rash improved, the patient was discharged to follow up with a primary care provider to monitor recovery and investigate other possible differential diagnoses, mainly rheumatoid arthritis.

Discussion: Cutaneous vasculitis, while often benign, may occasionally present due to complex underlying etiology. Impurities in cocaine, such as levamisole, have been associated with vasculitis. Levamisole is metabolized in the liver to aminorex, which may be detected in urine samples for up to 2 days after ingestion. Aminorex potentiates cocaine activity via increased release of catecholamines, most prominently norepinephrine, dopamine, and serotonin, leading to vasoconstriction and vascular remodeling due to its prolonged half-life. Clinical presentation of levamisole adulterated cocaine induced vasculitis is most commonly purpura. Diagnosis is made primarily upon histology and positive p-ANCA, MPO, and ANA results upon serology following a positive urinary screen for cocaine use. Levamisole adulterated cocaine induced vasculitis often resolves spontaneously, and thus treatment is most commonly supportive care, though steroids may be prescribed as needed. In conclusion, this case highlights the importance of determining illicit substance use in the setting of acute progressive vasculitis.

46) THE EFFECT OF ELECTRONIC USE ON THE MOODS OF ELEMENTARY SCHOOL CHILDREN

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Children today are growing up with unlimited access to electronics. If not careful, technology can negatively impact their mental health. Previous studies have linked childhood electronic use to emotional and behavioral problems and clinical depression.

This study was performed at St. John Catholic School in Little Chute, WI. Students in grades 1-3 and their parents filled out daily surveys for 14 days which inquired about the child's daily mood, electronic use, and sleep.

40% of parents reported that electronic use appears to have a negative impact on their child's mood, while 30% of parents believe that sleep plays a larger role in mood than electronics. Children reporting a worried mood spent the most time on electronics that day. However, positive moods overall were associated with a higher amount of electronic use. Parent data shows that children with positive moods obtained a more sleep the prior night than those with negative moods.

92% of parents already had established rules regarding their child's electronic use, and most kids spent 1 hour or less per day on electronics. This may account for the lack of negative mood associations with electronic use. However, the study does suggest that sleep plays a role in a child's mood. Further studies should evaluate a larger and more diverse sample size with a greater range of electronic usage as well as a balance of children with and without household electronic use rules.

47) LOOKING THROUGH THE VEIL OF INFILTRATES: THINKING BEYOND INFECTION: A CASE OF ORGANIZING PNEUMONIA

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Introduction: Organizing pneumonia generally presents with a subacute onset of fever, non-productive cough, and malaise. Patients respond well to corticosteroid therapy rather than antibiotics.

Case Description: A 43yo nonsmoking woman with a history of treated pulmonary tuberculosis 18 years ago in the Philippines and meralgia paresthetica presenting in pre-COVID era with a two-month history of recurrent fever, shortness of breath, non-productive cough, and generalized malaise. Her initial work up with CXR revealed a large left upper lobe infiltrate suggestive of community acquired pneumonia. She had traveled to the Philippines 5 months prior to onset of symptoms, but she denied any sick contacts. Her symptoms failed to improve despite receiving two courses of antibiotics, warranting further work up with CT chest which showed persistent bilateral chest infiltrates. Her QuantiFERON gold test came back negative. Her two subsequent elective bronchoscopies with transbronchial biopsies were unrevealing: no fungal elements and acid-fast bacteria on smear, and cultures were negative as well. Due to persistent symptoms, patient was admitted inpatient. Her infectious workup, including blood cultures, HIV, and Blastomyces antibody by EIA were all negative. Her rheumatologic work up with ANA was negative, C4 within normal limits, MPO/PR3 and c-ANCA negative but anti-dsDNA was positive with low C3. This prompted further diagnostic evaluation with transthoracic lung biopsy on day 3, which revealed findings consistent with organizing pneumonia. Antibiotics were stopped and the patient was started on high dose steroids (methylprednisolone 80mg QID) on day 5 of admission. Follow up rheumatology workup showed a negative ANA and anti-dsDNA. In subsequent days, the patient's respiratory status improved. On day 11 of hospitalization, she was discharged with a planned steroid taper.

Discussion: This case illustrates the importance of thinking beyond pneumonia when there is no improvement following a course of appropriate antibiotic therapy. Organizing pneumonia and the organizing phase of diffuse alveolar damage (ARDS) can have a similar appearance on histology, depending on the time at which biopsy is performed. However, the gradual clinical progression of this patient's bilateral infiltrates is more consistent with organizing pneumonia than ARDS, which typically presents acutely with a more readily identifiable trigger. This case also reminds us about the importance of interpreting pathology reports in clinical context.

48) A RARE CASE OF SEVERE PERNICIOUS ANEMIA

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Background: Pernicious anemia is characterized by autoantibodies to intrinsic factor, and subsequent impaired B12 absorption makes it the most common cause of B12 deficiency. Here, we present a case of severe pernicious anemia.

Objectives:

- Report a case of pernicious anemia in an adult without any previous medical care.
- Review diagnosis and treatment of pernicious anemia.

Case Presentation: A 58-year-old male with no significant medical or alcohol use history presented with paresthesia, BLE weakness, decreased appetite, persistent abdominal pain, chronic diarrhea, forgetfulness, frequent falls, and unintentional weight loss. He denied having blood in stool/melena, fevers, chills, or night sweats. Initial labs revealed severe macrocytic anemia and possibly hemolysis for LDH and total bilirubin were elevated and haptoglobin was undetectable. Subsequent work up of anemia showed low vitamin B12, normal folate, elevated methylmalonic acid and homocysteine levels, and elevated anti-parietal antibody IgG. He underwent EGD and no evidence of bleeding was found. Gastric mucosa biopsy identified chronic atrophic gastritis, intestinal/pseudo pyloric and enterochromaffin cell metaplasia, and absence of G cells in some fragments, and positive anti-intrinsic factor antibody confirmed pernicious anemia.

Discussion: Pernicious anemia commonly causes severe B12 deficiency; often presents with gradual onset of symptoms with signs and symptoms of anemia, glossitis, weight loss, and neurologic deficits up to several months. This case presented with signs of hemolytic anemia which is atypical presentation and presumably due to intramedullary and/or intravascular destruction of the fragile RBCs secondary to B12 deficiency. Diagnosis is made with visualization of atrophic gastric mucosa or presence of anti-intrinsic factor antibodies (low sensitivity but high specificity). Treatment is lifelong B12 supplementation.

Conclusion: As the most common cause of B12 deficiency, pernicious anemia should be considered in patients with megaloblastic anemia and vitamin B12 deficiency. Concurrent signs of hemolytic anemia may obscure the diagnosis.

49) A WEAK ACID CAUSING STRONG HALLUCINATIONS

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Introduction: Aspirin is a common analgesic and antiplatelet therapy. It can be found in many household medications and is a frequent source of both accidental and intentional overdoses. The incidence of aspirin overdose in the United States in 2018 was 9,287 cases. Common clinical features seen in aspirin overdose include tachypnea, tinnitus, nausea, vomiting, and acid-base abnormalities. Severe cases may also present with altered mental status/hallucinations, hyperthermia, and pulmonary edema.

Case: A 70-year-old female with past medical history of alcohol dependence, anxiety, and coronary artery disease presented with acute onset of visual and auditory hallucinations. The patient was tachycardic and tachypneic but otherwise hemodynamically stable. Physical exam revealed an elderly female with a normal neurological exam, ruddy cheeks, and was describing active hallucinations. Labs were significant for an acute kidney injury and an anion gap metabolic acidosis of 17. There was no leukocytosis, the rest of the complete metabolic panel was unremarkable, and the 9-panel drug screen and blood alcohol level were negative. The CT of the head without contrast showed no acute abnormalities. Additional labs were obtained. Thyroid stimulating hormone was within normal limits. Volatile alcohol, ethylene glycol, and acetaminophen labs were negative. However, the salicylate level was elevated (43). The patient admitted to taking many aspirin pills hours before presentation in order to control pain; she was diagnosed with salicylate toxicity. With the input of Poison Control, the patient was transferred to the ICU and started on a bicarbonate drip. As the acidosis improved and the salicylate level declined, the hallucinations ceased.

Discussion: Here we present an elderly female with auditory and visual hallucinations whose workup revealed salicylate toxicity. While this is a rare side effect of aspirin toxicity, it remains an important diagnostic consideration when evaluating a patient presenting with hallucinations, especially in a patient presenting with acid-base abnormalities. In every case, a careful drug history should be obtained. Treatment of salicylate toxicity involves stabilizing the patient, gastrointestinal decontamination (if indicated), and alkalization of the serum and urine.

50) A YOUNG FEMALE WITH CHEST PAIN

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29-year-old female with a past medical history of recent delivery complicated by post-partum hemorrhage 10 days ago who presented to the emergency department with chest pain. She describes it as midsternal chest pressure with associated shortness of breath. She had a similar episode the day prior that lasted 30 minutes. She has no other significant past medical history. Initial vitals showed a blood pressure of 130/86 mmHg, heart rate of 80 beats per minute, respiratory rate of 17breaths per minute, saturating 98% on room air. Initial laboratory findings were insignificant, including Troponin T <0.01. Chest X-ray showed a left pleural effusion and perihilar opacities. Electrocardiogram shows ST depressions in the anterior leads. Bedside echocardiogram showed wall motion abnormalities involving the inferolateral, inferior and inferoseptal wall. She was admitted for emergent coronary angiography. She was loaded with Aspirin 324 mg. She was emergently taken for coronary angiography which showed spontaneous coronary artery dissection (SCAD) of the mid and distal left circumflex artery. During angiography, she became hypoxic and was emergently intubated and was diuresed with Lasix. Transesophageal echocardiogram showed a left ventricular ejection fraction of forty percent with wall motion abnormalities involving the inferolateral wall. Patient was extubated and started on Aspirin, Plavix, metoprolol, lisinopril, and spironolactone. She was discharged 4 days after admission. Repeat echo 3 months post admission showed recovery of cardiac function.

Spontaneous coronary artery dissection (SCAD) is a rare cause of acute myocardial infarction. It is caused by non-traumatic and non-iatrogenic separation of the coronary arterial wall. SCAD has a predilection for young to middle aged women. Due to gender and age bias, SCAD can be frequently overlooked as a differential for acute chest pain. Early diagnosis of SCAD is crucial in preventing sudden cardiac death (SCD) or recurrent dissection. SCAD is estimated to represent 1.7 to 4% of ACS cases and may represent 0.5% of SCD. Causes of SCAD include emotional or physical distress. Patient's most commonly present with chest discomfort, but can also include neck pain, nausea, vomiting or diaphoresis. Women are more likely to present with atypical symptoms such as headache, shortness of breath, or back pain. Interestingly, forty percent of SCAD cases in a case series occurred in postpartum women. This case serves as a reminder to consider SCAD as a differential for young women who present with atypical chest pain. Early identification and intervention with antiplatelet medication is imperative to reducing morbidity and mortality.

51) PATIENT-REPORTED OUTCOMES OF SHORT-TERM INTRA-ARTICULAR HYALURONIC ACID FOR OSTEOARTHRITIS OF THE KNEE: A CONSECUTIVE CASE SERIES

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Background: Supartz FX (Seikagaku Corp., Tokyo, Japan) has been investigated as a therapeutic for knee osteoarthritis (OA) due to its claimed preservation of viscoelastic joint properties and improvement in pain and physical function. The US prescribing information suggests patients may experience benefit with as few as three of five injections administered once weekly. However, recommended guidelines from the American Academy of Orthopaedic Surgeons (AAOS) do not support injectable hyaluronate due to controversial results of randomized controlled trials.

Objective: Do patients experience statistically and/or clinically significant improvement in disability scores following three injections?

Methods: A total of 32 patients with a mean age of 66±14 years receiving Supartz FX were reviewed in a prospective, observational study. Functional outcome data via Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores for pain, stiffness, and physical function were collected at 0, 1, 2 and 3 weeks, and means were analyzed via paired t-test.

Results: Three injections at one-week intervals resulted in statistically significant improvement across all sub scores ($p<0.05$). Confidence intervals (CIs) of treatment effects (ES, 95% CI) for pain (0.27, 95% CI 0.99, 1.26), stiffness (0.17, 95% CI 0.50, 0.67), and function (0.55, 95% CI 2.79, 3.35) were recorded and compared to published minimum clinically important improvement (MCII) thresholds.

Conclusion: Despite manufacturer recommendations, in this study short-term use of Supartz FX for knee OA does not meet clinically significant thresholds as the treatment effects for WOMAC sub scores fail to satisfy published MCII for pain (0.39), stiffness (0.39) and function (0.37). In light of these findings and in concordance with recommendations set forth by the AAOS, this study contributes to a preventative medicine database that encourages exploration of non-surgical and non-opiate modalities for the management of osteoarthritis.

52) DEMOGRAPHIC TENDENCIES AND HOSPITALIZATION OUTCOMES AMONG INPATIENT ADMISSIONS OF OSTEOARTHRITIS IN THE MIDWEST: A 2016 STATE INPATIENT DATABASE STUDY

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Objective: To assess the inpatient prevalence of osteoarthritis in a Midwestern state and to identify trends in demographics and hospital outcomes.

Methods: The Wisconsin State Inpatient Sample Database (2016) was queried to identify hospitalization records with a primary diagnosis of osteoarthritis. Bivariate correlation, descriptive statistics, and single-layer mean comparison were used for categorical and continuous data within the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) sub-groups.

Results: In 2016, there were 64,805 admissions of osteoarthritis. The most common (>0.09%) were the right knee osteoarthritis (24.5%), left knee osteoarthritis (23%), right hip osteoarthritis (16.9%), left hip osteoarthritis (14.3%), knee unspecified osteoarthritis (11.5%), bilateral knees osteoarthritis (7%), and right shoulder osteoarthritis (2%). The mean age on admission was 67 years for each hip osteoarthritis, 66 years for each knee osteoarthritis, and 69 years for right shoulder osteoarthritis. The mean length of stay was 3.15 days for bilateral knee osteoarthritis and 1.92 days for the right shoulder osteoarthritis. Total inpatient charges and in-hospital mortality were highest in right shoulder osteoarthritis (USD 52,699.40 [0.6%]; N = 6), and total charges were lowest in right and left hip osteoarthritis (44,689.54 and 44,427.33, respectively). A greater frequency of females and Caucasians was consistently admitted within each of the included ICD-10-CM OA subgroupings. Age was correlated with charge in the left hip osteoarthritis (r = 0.050) and right shoulder osteoarthritis (r = 0.068), and was negatively correlated with charge in the bilateral knee osteoarthritis (r = -0.115), right knee osteoarthritis (r = -0.054), and left knee osteoarthritis (r = -0.060).

Conclusions: In Wisconsin, with somewhat of a generalizability to other Midwestern states, attention should be given to Caucasian, elderly, and female patients with osteoarthritis of the hip and knee. Further studies are needed to broaden the understanding of cost utilization, how charges and hospital stay compare nationwide, and where preventative efforts are needed.

53) BRAIN IS TIME

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Strokes are the 5th leading cause of death in America and contrary to belief up to 80% are preventable. Stroke results from lack of blood to the brain (Hemorrhagic and Ischemic). Without oxygen the brain cells will quickly begin to die resulting in potential lifelong deficits (paralysis/loss of muscle movement, difficulty talking and memory loss). With this in mind, it is essential that the community is aware of this disease and understands both the symptoms that present with stroke and the predisposing factors that puts individuals at greater risk. Our goal for this project is to educate the Brown County population on basic stroke prevention and detection so that strokes can be caught early on. We conducted a presentation on signs, symptoms, and risk factors for strokes in hopes that we help people learn how to identify and prevent a stroke. Having this information in your back pocket could save a life one day. Our project had two presentation dates that were advertised in the local community. Pre and post presentation surveys were created to assess understanding of the content and check for statistically significant improvement in scores. Pre and post surveys were labelled with matching numbers to avoid using personal medical records or other personal identifiers and the project was limited to those that can read English. 22 members of the ADRC were our participants for this study. They completed pre and post surveys. We then compared the overall performance change on the 10- question test. Mean test scores rose from 64% (pre seminar) to 84% (post seminar). Statistical analysis using a paired t-test computed a p-value of 0.0063 meaning there was a statistically significant difference between the two groups. Although baseline knowledge was high, every participant left with new knowledge (demonstrated by an increase in test scores).

54) A CURIOUS CASE OF AN IMAGING ILLUSIVE INSULINOMA

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Abstract: Insulinomas are extremely rare neuroendocrine tumors that present most commonly with symptoms of neuroglycopenia and improve with administration of glucose. Here we present a complicated and delayed diagnosis of an insulinoma in an 18-year-old Caucasian female who presented to an outside hospital following a seizure, etiology was found to be hypoglycemia. Laboratory evaluation revealed elevated insulin, c-peptide, and pro-insulin with a negative chromogranin test and two negative sulfonylurea screens. As an insulinoma was suspected, she then underwent multiple imaging tests including CT pancreas, EUS, MR sella, and PET scan in attempt to confirm the presence of an insulinoma, however, these were all negative for a source. She was subsequently discharged on doxazosin 200mg TID with instructions to eat regular meals and snacks. She subsequently suffered two more hypoglycemic seizures at home in the presence of her family and was readmitted. Given her ongoing hypoglycemia and no insulinoma identified, there was concern for sulfonylurea abuse, however, screen was again negative. The management of her hypoglycemia proved difficult even on D10 maintenance fluids and thus octreotide was started in the ICU. After much discussion about next imaging studies, the insulinoma was finally appreciated on a multi-phase MRI which located a 9 mm mass in the proximal pancreatic body. She subsequently underwent an open enucleation and pancreaticogastrostomy. This case is particularly useful as it highlights how a delay in diagnosis due to failure to localization an insulinoma via imaging lead to significant health risks in an unusually young patient with a sporadic insulinoma. A review of insulinoma imaging literature was performed to guide future clinicians in the selection of imaging techniques for localization with hopes of preventing further hypoglycemic seizures and subsequent neurologic sequelae.

55) DIGITAL COACHING STRATEGIES TO FACILIITATE BEHAVIORAL CHANGE IN TYPE 2 DIABETES: A SYSTEMATIC REVIEW

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Context: In this systematic review, we focus on the clinical impact of digital tools for providing health coaching, education, and facilitating behavior in patients with prediabetes or type II diabetes. Our approach was designed to provide insights for clinicians and healthcare systems that are considering adopting such digital tools.

Evidence Acquisition: We searched CINAHL, Scopus, and Ovid/MEDLINE databases using PRISMA guidelines for studies that reported digital coaching strategies for management and prevention of type II diabetes published between January 2014 and June 2019. Articles were reviewed by two independent blinded reviewers. Twenty-one articles met inclusion criteria.

Evidence Synthesis: We found that 20 of 21 studies in our analysis showed statistically significant improvements in at least one measure of diabetes control including HbA1c, weight loss, fasting blood glucose, and BMI. Studies that reported weight loss percentage from baseline at 1 year reported values ranging from -3.04% to -8.98% similar to outcomes with traditional coaching in the DPP (N=4). Additionally, all studies that included a comparison group of in-person or telephone-call based coaching showed statistically better or similar outcomes in the digital coaching group (N=5).

Conclusions: The evidence reported in this systematic review suggests that digital health coaching offers a promising strategy for long-term management and prevention of type II diabetes in diverse populations with similar benefits to in-person or telephone-based health coaching. With the potential to treat large numbers of individuals in diverse geographic locations we argue that digital coaching offers a promising solution to the rapid increase in diabetes prevalence.

56) PERSISTENT PHOSPHATURIC MESENCHYMAL TUMOR CAUSING TUMOR-INDUCED OSTEOMALACIA TREATED WITH IMAGE-GUIDED ABLATION

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Objective: Tumor-induced osteomalacia (TIO) is a rare cause of hypophosphatemia characterized by vague symptoms of gradual muscle weakness and diffuse bone pain with pathologic fractures that often lead to a delayed diagnosis. This condition is usually caused by benign phosphaturic mesenchymal tumors (PMT). Here we present a case of persistent PMT after surgical resection treated with image-guided ablation.

Methods: We present the patient's clinical examinations and laboratory findings (phosphorus, 1,25 (OH)2D, FGF-23, Intact PTH). Representative histologic images of a PMT are also presented.

Results: A 61-year-old male was evaluated for persistent hypophosphatemia and presumed osteomalacia. Six-years earlier he underwent surgical excision of a left ischial mass after presenting with TIO. The pathology was consistent with a PMT, however, hypophosphatemia persisted suggesting incomplete resection. He was treated with calcitriol and phosphate salts. A PET Ga68 dotatate scan of the patient revealed an avid left ischial mixed lytic and sclerotic lesions with marked amount of radiotracer uptake, suggesting persistent tumor. The patient was resistant to re-excision of the tumor due to the extended recovery period from his prior surgery and was treated instead with cryoablation of the tumor. His biochemical findings of hypophosphatemia and elevated FGF23 resolved after the ablation and have remained normal for 5 months after surgery.

Conclusion: In patients with TIO, wide surgical excision is the treatment of choice. When this is not possible, image-guided ablation is an alternative therapeutic option.

57) AUTOIMMUNE AND INFECTIOUS DISEASE: TWO SIDES OF THE SAME COIN

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Background: Known complications of immunosuppressive therapies include the reactivation of latent pathogens and the development of new infections. We present a case that illustrates how these complications can both shape and plague therapeutic strategy and urgency.

Case: A 69-year-old male with coronary artery disease, aortic stenosis status post mechanical aortic valve replacement (requiring anticoagulation), hypergammaglobulinemia, and hypothyroidism presented to an outside hospital with progressive weakness, fatigue, night sweats, and nonspecific myalgias. Blood tests showed elevated liver enzymes and pancytopenia, and axillary lymph node biopsy revealed a necrotizing granuloma. He was transferred to our hospital for further work-up. Upon arrival, the patient appeared chronically ill, had a mechanical S2, dactylitis, and generalized sarcopenia. Peripheral blood smear showed normal cell morphology and no circulating blasts. A bone marrow biopsy was performed, revealing hypocellular marrow. Further testing demonstrated positive anti-ANA and DS-DNA antibodies. C3 and C4 complement levels were low. His HIV, hepatitis panel, EBV, CMV, parvovirus, lyme, and syphilis tests were negative. Interferon-gamma testing was performed on the axillary lymph node sample and resulted as indeterminate. Bronchoscopy with bronchoalveolar lavage was performed which was negative for fungal, mycobacterial, and bacterial infection, and showed many polymorphonuclear and unidentifiable cells. Differential diagnosis after the first set of tests included extrapulmonary tuberculosis, systemic lupus erythematous, vasculopathy, and a broad range of infectious diseases- specificy. Another lymph node biopsy was scheduled to further rule out extrapulmonary TB before starting empiric steroid treatment. However, before results from the lymph node biopsy returned, the patient's debility continued to progress fairly quickly. He ultimately suffered a retroperitoneal bleed and died prior to final diagnosis and treatment initiation.

Discussion: This case illustrates the importance and challenges of obtaining an accurate diagnosis in the most time-sensitive manner to minimize therapeutic complications. Clinicians should be aware of the overlap between autoimmune and infectious disease conditions given that incorrect treatment may cause significant morbidity or mortality.

58) AN UNUSUAL CAUSE OF STROKE

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Introduction: Eosinophilic granulomatosis with polyangiitis (EGPA) is an extremely rare disease with a prevalence of 1-3 in 100,000 patients. While it is largely considered a vasculitis, it presents with neurological symptoms in 62% of patients.

Case Presentation: A 69-year-old male with a history of bladder cancer, adult-onset asthma, and stage IIIa chronic kidney disease, presented to his PCP and was found to have an elevated WBC. Upon further questioning, the patient reported non-productive cough, rhinorrhea, sinus congestion, malaise, myalgia, and arthralgia. He was started on supportive care for a suspected viral syndrome. Two days later, he developed increased pain in his jaw and cheeks with chewing. The worsening symptoms prompted further work-up for possible giant cell arteritis. Initial labs showed elevated C-reactive protein, rheumatoid factor, and CPK, 2+ proteinuria, 3+ hematuria, as well as leukocytosis with 61% eosinophils (reference <1%). Based on these findings, he was scheduled for temporal artery and renal biopsies as part of the work-up for giant cell arteritis. In recovery following the biopsy, the patient reported new-onset weakness and numbness in his right arm and was taken to the ED for stroke work-up. A head and neck CT-A showed no vascular stenosis. An MRI showed multifocal lacunar infarcts and telemetry showed episodes of SVT with heart rates into the 190s for 5 minutes. He was transferred to our hospital for more advanced care and work-up of a suspected vasculitis. Upon admission, vitals were stable, physical exam was unremarkable. Initial lab work suggested leukocytosis with eosinophilia (32%) and AKI. Chest X-ray, echocardiogram and MR-angiography were unremarkable and he was negative for MPO, ANCA, and PR-3. Following pan-negative work-up, his renal biopsy returned consistent with eosinophilic granulomatosis with polyangiitis (EGPA). Rheumatology and nephrology were consulted. He was started on 1g of IV methylprednisolone for 3 days and transitioned to 1mg/kg prednisone following the high-dose steroid pulse. Because of his history of bladder cancer, the patient was treated with rituximab infusions instead of the standard cyclophosphamide.

Discussion: EGPA is a rare disease and diagnosis is complicated by its non-specific symptoms. The prototypical EGPA patient presents with asthma, fatigue, myalgia, and sinusitis, which can be easily mistaken as asthma exacerbated by a viral illness. Here we report a case of EGPA vasculitis to raise awareness of a less common cause of stroke.

59) A RARE CASE OF RECURRENT H. INFLUENZAE MENINGITIS IN AN IMMUNE COMPETENT ADULT

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Introduction: Recurrent meningitis occurs primarily in immunocompromised patients, such as those with HIV or a history of splenectomy. The most common culprit organism in cases of recurrent meningitis is *Streptococcus pneumoniae*. Recurrent meningitis typically does not occur in immunocompetent patients unless there is a nidus for infection such as head trauma, cranial structural abnormalities, and hospital acquired infections in neurosurgical patients. In the rarer cases, there tends to be a higher frequency of gram negative coccobacillary infections.

Case Description: A 21-year-old man with a past medical history of gunshot wound to the head two years prior, with subsequent L cranioplasty, and *H. influenzae* infection one year prior now presents with headache, AMS, emesis and diarrhea. While in the ED he had a generalized seizure, a fever of 101.6 F, as well as leukocytosis. He received empirical meningitis treatment with ceftriaxone. Lumbar puncture was performed and revealed 3,493 WBC, protein of 244, and glucose of 16. CT of the head showed left cranioplasty and left hemisphere encephalomalacia, consistent with prior imaging. PCR CSF and blood cultures both returned positive for *H. influenzae*. Work up for immunodeficiency included ultrasound of the spleen, which was normal. A CT of the sinuses showed deformities of the paranasal sinuses. After being stabilized, the patient was discharged home and improved with a 2-week ceftriaxone course. Patient finished antibiotics regimen and was scheduled to follow up with neurosurgery outpatient but unfortunately was lost to follow up.

Discussion: This case highlights a rare instance of recurrent community-acquired *H. influenzae* meningitis in an immunocompetent patient. In immunocompetent patients with recurrent meningitis, a nidus of infection from prior intracranial abnormalities should be explored with history and imaging, even if no prior history available. In our case, potential niduses for infection were cranioplasty from prior gunshot wound and paranasal sinus malformation observed on CT. Both structural alterations can cause infection by direct entry of organisms into the CNS from contiguous infection, surgery or trauma. On confirmation of *H. influenzae*, IV ceftriaxone for 2 weeks was shown to clear our patient's infection on both occurrences. Patients with recurrent meningitis that may be due to anatomic abnormalities need a referral to neurology/neurosurgery. In a review of 493 cases, recurrences occurred in 6.2 percent of patients with community acquired meningitis. Among the 38 recurrences, only 4 were due to *H. influenzae*. This case highlights the importance of identifying niduses for infection in otherwise healthy patients with recurrent meningitis so that susceptibility to less common gram negative coccobacillary infections can be further studied, as well as prophylactic regimens established.

60) THE INFLUENCE OF THE NON-CALORIC ARTIFICAL SWEETENER ACESULFAME POTASSIUM ON VASCULAR HEALTH

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As obesity and diabetes have become more prevalent, non-caloric artificial sweeteners (NCAS) have become one of the most widely used food additives. Despite increased use, scientific data about their long-term health effects is limited and controversial. Our preliminary metabolomics data show that following a three-week diet supplementation in a diabetes susceptible BB-DR rat model, acesulfame potassium (ACE-K+), a common NCAS, accumulates at high levels in the blood. This study aims to find out how accumulation of NCAS additives in the blood affect endothelial health. We hypothesize that chronic exposure to NCAS impairs rat microvascular endothelial cell function. To test this hypothesis, Sprague-Dawley rat cardiac microvascular endothelial cells (RCMVEC) function was evaluated with tube formation assays. Reactive oxygen species (ROS) were also measured to determine oxidative stress as a potential source of dysfunction.

RCMVEC were treated with 0.25X/1X/4X ACE-K+, stevia, and sucralose (N=3) with 1X being equivalent to the NCAS concentration in one 12-oz can of diet soda. Following two-week treatment, the cells underwent tube formation, and ROS assays. The results were averaged across biological replicates (N=3), followed by an unpaired t-test comparing the appropriate groups using SigmaPlot.

Stevia showed a 40% and 58% decrease in mean tube length and mean branch points respectively for the 4X treatment. ACE-K+ showed a 40% and 44% decrease in mean tube length and mean branch points respectively for the 1X treatment and 56% and 65% for the 4X treatment. Sucralose showed a 53% increase in mean tube length for the 4X treatment. ROS data was inconsistent and did not follow a trend.

Stevia impaired rat microvascular endothelial cell function only at elevated concentrations, whereas ACE-K+ did so even at 1X. Sucralose results were inconsistent, partially due to increases in cellular death making it hard to carry out the assay in full, which didn't allow for accurate readings. ROS data showed no clear trend, suggesting that impairment to endothelial function was not due to oxidative stress. These findings support our hypothesis that NCAS disrupt endothelial function, especially for ACE-K+, and Stevia to a lesser degree, however, it does not apply to sucralose.

In the future, we will apply this concept to live rat mesenteric arteries and evaluate vasoreactivity in response to nitroprusside.

61) DISSEMINATED NOCARDIOSIS MIMICKING PROGRESSION OF MALIGNANCY

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Background: Nocardia is a gram-positive, filamentous rod that may present with acute or chronic symptoms primarily involving the skin, lungs, or CNS. Disseminated disease is seen in patients with impaired immunity. Here, we present a case of disseminated nocardiosis in a patient with metastatic ovarian cancer.

Case: A 76-year-old female with metastatic ovarian cancer was admitted with failure to thrive. She recently underwent brain MRI which revealed a new enhancing right frontal lesion with surrounding edema concerning for metastasis. Gamma knife radiation was performed and the patient was started on a dexamethasone taper. One week later, a surveillance CT of her chest demonstrated a right-sided 3 cm pleural-based mass concerning for disease progression. Two weeks following radiation she was hospitalized as previously described. A repeat CT of her chest demonstrated a large necrotic lung mass which had significantly enlarged from prior. Urgent bronchoscopy was performed and cultures from bronchial washings revealed filamentous, branching bacilli in modified acid-fast stain, speciating as Nocardia. She was started on high-dose Bactrim, Imipenem & Linezolid. Repeat MRI showed two new ring-enhancing lesions concerning for nocardial brain abscesses. The patient clinically worsened despite broad spectrum antibiotics and required transfer to the ICU for respiratory failure. The family ultimately declined aggressive measures and she transitioned to hospice care.

Discussion: This case highlights the salient features of nocardial infections including the predilection towards immunocompromised hosts and findings seen in disseminated disease. Our patient was found to have a rapidly progressive lung mass with new brain lesions seen on imaging, which may have easily been misattributed to cancer progression. It is prudent to keep a broad differential in mind in patients with immunocompromised states.

62) MACROPHAGE ACTIVATION SYNDROME IN AN ADULT WITH LUPUS-VASCULITIS OVERLAP SYNDROME

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The Patient: A 33-year-old male with a history of systemic lupus erythematosus (SLE) presented with altered mental status. He had been lethargic and irritable for a few days. He also noted progressive diffuse arthralgias, and weight loss of 50 pounds over a few months. On physical exam he was febrile to 103 degrees Fahrenheit, tachycardic to 126 beats per minute, hypotensive, and lethargic. He had diffuse joint tenderness, splenomegaly, and inguinal lymphadenopathy. Initial laboratory work-up was remarkable for hypercalcemia to 10.7 mg/dL, acute kidney injury with a creatinine of 1.71 mg/dL, and pancytopenia (white blood cell count 2.2 $10e^3$/uL, hemoglobin 6.4 g/dL, and platelet count 104 $10e^3$/uL). Acute phase reactants were elevated including ferritin to 1669 ng/mL and ESR to 85 mm/hr. dsDNA was elevated and C3 was low. p-ANCA and serine protease 3 were elevated. CT scan of the chest/abdomen/pelvis was remarkable for inguinal lymphadenopathy. He underwent excisional inguinal lymph node biopsy that showed angiomyomatous hamartoma. His hemodynamic instability and hypercalcemia were treated with IV fluids and calcitonin, respectively. He was started on broad spectrum antibiotics while work up continued. Work up was ultimately consistent with lupus-vasculitis overlap syndrome including macrophage activating syndrome (MAS) without signs of infection. On day five of hospitalization, with the help of hematology and rheumatology, high-dose steroids were started. His mental status improved significantly.

The Diagnosis: MAS is a rare disorder of abnormal immune system activation. It is a sub-category of hemophagocytic lymphohistiocytosis (HLH), most commonly diagnosed in children, and rarely presenting in adults. There are familial forms of HLH and secondary forms of HLH that are triggered by an underlying illness such as infection, malignancy, or active rheumatologic conditions in which case it is referred to as MAS. Recognition of MAS is challenging as it often presents with vague symptoms. It is traditionally diagnosed using specific clinical criteria. If 5 of 8 of the following are present, the diagnosis can be made: fever, splenomegaly, cytopenias, hypertriglyceridemia, hemophagocytosis on biopsy, low/absent NK activity, ferritin >500 ng/mL, and elevated CD25. Quick diagnosis is critical as it can be rapidly fatal. The mainstay of treatment is high-dose steroids, and the prognosis for MAS if the underlying cause is effectively treated is excellent.

Clinical pearls:

- MAS rarely presents in adults, but should be kept in mind in all patients with a history of autoimmune conditions who present with fever.
- Treatment with high-dose steroids should not be delayed if MAS is suspected as it can be rapidly fatal.

63) SUSPICIOUS PROGRESSION OF TRANVERSE MYELITIS

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Introduction: Weakness can be attributed to a variety of differentials including brain, spinal cord, muscular, neuromuscular junction, and peripheral nerve diseases. Bilateral lower extremity weakness and sensory deficits can often be attributed to myelopathies and confirmed by MRI. Determining the etiology requires extensive workup for the correct diagnosis and treatment.

Case Description: A 77 yo male with an extensive past medical history including stroke, ITP, MI, gout, HTN, and Dressler's syndrome presented from an outside hospital with progressive bilateral lower extremity weakness ruled as transverse myelitis. MRI spine from outside hospital demonstrated hyperintense signal at T10-L1. CSF showed elevated protein with mildly elevated WBC. He was started on methylprednisone with improvements in lower extremity weakness in two days.

After completing his steroid course, he was discharged to rehabilitation for continued improvement of lower extremity weakness. However, he quickly developed hypotension, respiratory failure, renal failure, and worsening mental status and was intubated in the ICU. Repeat spine imaging showed abnormal hyperintensities extending to the cauda equina. This abnormality prompted neurology to request a punch biopsy for possible intravascular lymphoma. Punch biopsy of cherry angioma on skin of left abdomen showed atypical intravascular CD20+ lymphocytes consistent with B cell lymphoma. He was started on rituximab; comfort care and extubating were discussed with family given critical status. Unfortunately, he passed away after extubating. Final autopsy confirmed intravascular lymphoma involving the central nervous system.

Discussion: Intravascular lymphoma is a rare subtype of large cell lymphoma where there are lymphoma cells within the small blood vessels without a mass or detectable tumor. Patient presentations vary tremendously and can include fatigue, fevers, rapidly progressive neurological signs, and skin lesions. Diagnosis is made with skin biopsies exhibiting neoplastic lymphoma cells within the capillaries and venules. Systemic treatment is with R-CHOP, and targeted therapy with intrathecal chemotherapy, radiation, or high dose methotrexate are used to penetrate the CNS. Although a rare and difficult diagnosis, early detection and treatment of ILCL improves patient prognosis.

64) VERTEBRAL OSTEOMYELITIS WITH MULTIPLE ABSCESSES

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Introduction: Subacute back pain with intermittent fever should prompt evaluation for an infectious etiology. The differential is broad with S. aureus accounting for over 50% of cases in developed countries. Prompt diagnosis and tailored treatment with close observation is crucial as vertebral osteomyelitis can lead to devastating neurologic impairment if left untreated.

Case Report: A 56-year-old Ecuadorian woman presented to the ED with intermittent fevers and three months of lower back pain which developed after lifting her grandchildren. She also had bilateral lower extremity numbness and tingling with shooting pain down both legs. She was initially hospitalized a few weeks prior while in Ecuador for a presumed "lumbar spine infection". MRI revealed osteodiscitis centered around L5-S1 with associated rim-enhancing epidural, paraspinal, and intramuscular abscesses bilaterally. Blood cultures were obtained, ceftriaxone and vancomycin were empirically started, and the patient was subsequently admitted to the hospital. CT-guided biopsy of the left piriformis abscess and further blood cultures were later found to contain *Brucella melitensis*. Upon further questioning, patient had risk factors for Brucella including exposure to unpasteurized cheese and sheep meat. She was discontinued on her current antibiotics and started on doxycycline, rifampin, and gentamicin. Over the course of the next few days, patient's symptoms improved, and she remained afebrile until discharge 26 days after admission. She continued doxycycline and rifampin and was seen by outpatient infectious disease a month later with significant improvement of back pain, appetite, and energy level.

Discussion: Brucella discitis is a rare cause of chronic lower back pain with intermittent fevers and can present with MRI findings of spondylitis with associated paravertebral, epidural, and psoas abscesses. While only 100 – 200 cases of brucellosis are reported in the United States, over 500,000 cases are reported worldwide. Therefore, brucellosis should be always considered as a differential in those who have been outside the country. Those suspected should have blood cultures obtained with CT-guided biopsy for further evaluation. Appropriate and prolonged antibiotic therapy (doxycycline, rifampin, and potentially aminoglycoside) for *Brucella* is necessary for proper treatment and differs from typical antibiotics used to treat more common cause of osteomyelitis.

65) A MYSTERIOUS MONOCYTIC MENINGITIS

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A 42-year-old female presented with several week history of daily headaches, cervicalgia, and nausea. Following unsuccessful treatment for presumed migraines, she developed double vision, unsteady gait, and right-sided hearing loss. She was afebrile and experienced no rash, weight loss, or lymphadenopathy. She worked as a dialysis nurse, was an avid outdoorswoman who regularly ingested wild game from her hunts, and traveled to Arizona in the previous year.

Lumbar puncture demonstrated elevated central spinal fluid protein, pleiocytosis with monocyte predominance, and hypoglycorrhachia. Brain magnetic resonance imaging demonstrated abnormal enhancement of cranial nerves (CN) III, V, VII, VIII, X, and XI bilaterally and bony thickening of the occipital skull and adjacent dura across the right tentorium; the latter was suggestive of a meningioma.

Her symptoms initially improved on antibiotic therapy for presumed neuroborreliosis but worsened three days later. Extensive infectious and autoimmune workup were negative. Neurosurgery performed a craniotomy for debulking of the mass and biopsy of CN V3. The posterior fossa mass was confirmed as a benign meningioma and CN biopsy demonstrated an atypical histiocytic reaction suggestive of Erdheim-Chester disease. Positron emission testing revealed no disease outside of the central nervous system but showed diffuse leptomeningeal hypermetabolic activity throughout the spine and in multiple CN roots.

Despite empiric treatment with dexamethasone and subsequently with cladribine, she had progressive neurologic decline culminating in acute brain herniation. Final autopsy showed central nervous system histiocytic sarcoma with extensive leptomeningeal involvement throughout the brain and spine.

This case illustrates the diagnostic approach to multiple cranial neuropathies with CSF pleiocytosis, elevated CSF protein, and hypoglycorrhachia. Further, it highlights the differential diagnosis for histiocytic reactions and histiocytoses, a rare but important set of inflammatory disorders.

66) BILATERAL FACIAL PALSY AND COVID-19

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Introduction: COVID-19 primarily affects the respiratory system but some patients have neurological symptoms. The most commonly reported neurologic manifestations are headache, anosmia and ageusia.

Case report: A 50-year-old male with no significant past medical history presented with generalized body aches, intermittent numbness of his BUE and BLE and dry cough. A week later he tested positive for COVID-19. Over the next 3-4 days his symptoms progressed to include bilateral facial numbness and weakness. Day 22 after onset, he was seen in the ED. CT of the head was negative, he was diagnosed with Bells palsy, and was started on Valacyclovir 1000 mg TID X 7 days. Three days later, the patient returned to the ED with continued facial paralysis. A repeat COVID-19 test was positive. Physical exam was unremarkable except for bilateral facial weakness. MRI Brain revealed a punctate left frontal subcortical white matter high FLAIR signal intensity lesion. CSF analysis was notable for high total protein and IGG, but negative for oligoclonal bands and not supportive of MS. Of note, CSF was negative for SARS-CoV-2 nucleic acid. HIV, Lyme PCR and CXR were also negative.

Discussion: This case illustrates a patient diagnosed with bilateral facial nerve palsy and bilateral upper and lower extremity numbness and tingling. The pathologic mechanisms could be from direct invasion similar to SARS and MERS viruses. However, COVID-19 nucleic acid was undetected in the CSF. COVID-19 stimulates production of various inflammatory cytokines and immune-mediated processes which could explain the neurologic findings.

Conclusion: COVID-19 primarily presents with respiratory symptoms. However, neurological symptoms can also occur and in some cases can even precede the respiratory symptoms. A high index of suspicion is needed to avoid a delay in diagnosis and treatment and to prevent further transmission.

67) TAKOTSUBO CARDIOMYOPATHY IN A PATIENT PRESENTING WITH MYASTHENIC CRISIS

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Introduction: Takotsubo syndrome (TTS) is characterized by transient regional left ventricular (LV) wall motion abnormalities, as can happen in classical type-I myocardial infarction, however, usually we do not see any evidence of obstructive coronary artery disease on coronary angiogram. We present a case of TTS in a patient who was initially admitted to the medical ICU for myasthenic crisis (MC).

Case Description: A 77-years-old female patient with past medical history of myasthenia gravis (MG), hypertension and dyslipidemia was admitted because of acute hypoxic hypercapnic respiratory failure, dysphagia and dysphonia requiring emergency endotracheal intubation and mechanical ventilation. Initial EKG was suggestive of ST elevation in lead aVL. Coronary angiogram was unremarkable for any evidence of significant coronary artery stenosis. Echocardiogram revealed abnormal LV wall motion with LV ejection fraction of 23 %. The pattern was suggestive of Takotsubo cardiomyopathy. The patient was initiated on Metoprolol and Lisinopril. For MC, the patient underwent plasmapheresis and received Pyridostigmine, Azathioprine and Prednisone.

Discussion: TTS in the setting of MG is an uncommon but can potentially be a life-threatening complication. The pathogenesis of TTS is not well established. However, some of the proposed mechanisms include catecholamine surge, vasospasm of coronary arteries and microvascular dysfunction.

MC (leading to acute hypoxic respiratory failure) can pose significant amount of physical and psychological stress leading to excessive adrenergic drive. This may predispose patients towards TTS. In addition neuromuscular junction disorders can probably increase the risk of TTS secondary to increased levels of circulating catecholamines.

Conclusion: As TTS could be reversible, therefore, it becomes important to remove any precipitating trigger which can lead to catecholamine surge. Identification of myasthenia crisis should prompt the physician to screen for features of TTS as the early diagnosis could help optimize pharmacotherapy.

68) COPD CAN BREAK THE HEART

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Introduction: Takotsubo cardiomyopathy (TCM) is characterized by transient regional left ventricular wall motion abnormalities, as can similarly be seen with classical myocardial infarction, but without the evidence of obstructive coronary artery disease. The exact mechanism remains unknown. We present a case of TCM in a patient who was admitted for COPD exacerbation.

Case Description: A 64-years-old male patient with past medical history of COPD presented with chief complaint of acute shortness of breath. The patient had minimal cough, decreased air entry bilaterally (on auscultation) in the lung bases and elevated inflammatory markers. In the ER, he was given nebulization therapy with albuterol-ipratropium. After about an hour, he started having chest pain and his shortness of breath got worse. Patient was found to have elevated troponin and ST elevation on lead II, III and aVF leads of EKG. The patient underwent immediate coronary angiogram but it did not reveal any evidence of occlusive coronary artery disease. Echocardiogram revealed abnormal left ventricle (LV) wall motion, reminiscent of Takotsubo cardiomyopathy, and LVEF (left ventricle ejection fraction) of 25 %. He was discharged on metoprolol and Lisinopril, with the suggestion to initiate spironolactone as outpatient. For his COPD exacerbation, he received Azithromycin and Prednisone.

Discussion: TCM in the setting of COPD exacerbation is an uncommon phenomenon. Some of the proposed pathogenesis mechanisms include catecholamine surge, vasospasm of coronary arteries and microvascular dysfunction.

In COPD exacerbation, theoretically one could have catecholamine surge (from hypoxia). Beta-2 agonists remain the hallmark in the treatment of COPD exacerbation. Even though beta-2 agonists are thought to selectively act on beta-2 receptors yet they can have minimal effect on the heart through beta-1 receptors. This can potentially stress the already stressed heart (from catecholamine surge) and may trigger TCM as happened in our case.

Conclusion: As TCM could be reversible, therefore, it becomes important to remove any precipitating trigger which can lead to catecholamine surge, such as COPD exacerbation.

69) THROMBOTIC THROMBOCYTOPENIC PURPURA MASQUERADING AS PANCREATITIS

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Introduction: Thrombotic thrombocytopenic purpura (TTP) is a rare disorder of platelet aggregation and adhesion. Acquired TTP involves the formation of inhibitory antibodies against ADAMTS13, resulting in hemolytic anemia, thrombocytopenia, and end-organ dysfunction. Pancreatitis and cardiac dysfunction are rare presenting symptoms.

Case: This is a 73-year-old female with a history of diffuse large B cell lymphoma (in remission), idiopathic thrombocytopenic purpura, Sjogren's syndrome, and ischemic colitis who presented with epigastric pain. Initial studies showed elevated lipase (653 U/L), elevated troponin, thrombocytopenia (4x103/uL; baseline 300x103), and pancreatic inflammation on CT. She was diagnosed with idiopathic pancreatitis and admitted for further evaluation of cardiac dysfunction. Admission exam revealed stable vital signs, epigastric tenderness, and bruising on the lower extremities. She denied chest pain, was neurologically appropriate, and had unremarkable EKGs. She began treatment for pancreatitis. Within 24 hours of admission, she became altered and lethargic. Repeat labs showed platelets <5x103/uL, schistocytes on peripheral smear, and elevated creatinine. She began emergent plasma exchange and methylprednisolone for empiric treatment of TTP with labs showing ADAMTS13 activity at less than 5%. Her course was complicated by DVTs, a pulmonary embolism, and ongoing GI bleeds due to small bowel ischemia. She started Rituximab and underwent a small bowel resection for thrombocytopenia and bleeding with symptom resolution.

Discussion: TTP has variable presentations and can be difficult to recognize. Rapid treatment of TTP is critical since eighty percent of patients have an ADAMTS13 inhibitor that can be removed by plasma exchange. Without plasma exchange, mortality can exceed 90%. This case illustrates the importance of considering TTP in patients with unexplained thrombocytopenia, anemia, and multisystem dysfunction.

70) UA: 3+ RBC, "2+ BABESIA"

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Background:

Babesiosis is a disease caused by the protozoa *Babesia*; transmitted through a tick vector, which infects human red blood cells causing a hemolytic anemia. We report a case of babesiosis with coinfection of Lyme Disease from southwestern WI.

Case Presentation: 82-year-old male presented with two days of confusion, falls, weakness, and fevers. Patient was febrile, tachycardic, frail appearing, and had petechia on bilateral lower extremities. Labs demonstrated hemolytic anemia, and thrombocytopenia. Interestingly, his urinalysis revealed RBC morphology concerning for a parasitic infection. A peripheral smear confirmed intraerythrocytic organisms consistent with *Babesia*. Additionally, Lyme IgG was positive. Atovaquone 750mg PO Q12, Azithromycin 500mg PO QD, and Doxycycline 100mg PO BID were initiated. Confirmatory PCR for *Babesia* and Western blot for Lyme Disease were obtained. Daily EKGs and Giesma stains were performed to monitor QT interval and parasitemia respectively. Hemolytic labs were monitored twice daily and there was consideration for exchange transfusion, but no indication was met. Patient returned to baseline mental status by day 3 and completed 14 days of antibiotics.

Discussion: Babesiosis should be considered in any patient with hemolytic anemia residing in geographic areas with high incidence of tick-borne zoonotic disease. PCR is the mainstay of diagnosis, though high-grade parasitemia can be readily detected on peripheral blood smears. Following the percentage of involved RBCs via daily Giemsa smears enables confirmation of effective treatment. Coinfections, while rare, can occur with Borrelia species (including Lyme Disease) as well as *Anaplasma, Ehrilchia*, and others.

71) EMPIRIC TREATMENT OF RING-ENHANCING CNS LESIONS IN A PATIENT WITH AIDS

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A 36 year old male patient initially presented with penile discharge, lymphadenopathy, and unintended weight loss of 50 lbs. CT showed pulmonary nodules, splenic lesions, hepatic lesions, multiple ring-enhancing lesions in the brain, and enlarged lymph nodes in the neck and abdomen. He tested positive for HIV-1 and negative for other STI, toxoplasma Ab, or cryptococcal Ag. Infectious disease and oncology services were consulted given the newly diagnosed HIV and concern for lymphoma. Lymph node biopsy showed caseating granulomas and the patient was discharged home with the diagnosis of HIV and possible intracranial lymphoma with follow up. He then presented again with encephalopathy which progressed requiring ICU transfer and intubation. He received empiric therapy for meningitis and underwent a lumbar puncture showing Glucose 18, Lymphocytes 81, Neutrophils 15, Cell count 78, RBC 33, Protein 344 with cultures and BioFire unrevealing. Lymph node biopsy of the right neck showed caseating granulomas. TB quantiferon testing was positive. The patient became more agitated with neurological changes with head CT that showed increasing ventriculomegaly. An external ventricular drain was placed with opening pressure 25cm H2O with continuous EEG showing bitemporal seizures. The patient was started on RIPE therapy: Rifampin 600 mg, Isoniazid 300mg, Pyrazinamide 1g, and Ethambutol 800mg as well as Decadron and Bactrim for PJP prophylaxis. The patient's mental status gradually improved.

A repeat inguinal lymph node biopsy was completed, showing angiomyomatous hamartoma and negative for lymphoma and Mycobacteria. Tracheal aspirate grew MAC, but lymph node biopsies did not grow as would be consistent with active infection. Ultimately, CSF culture grew mycobacterium tuberculosis confirming the diagnosis. ART therapy for HIV was delayed 8 weeks after TB treatment initiation to avoid immune reconstitution inflammatory syndrome.

72) CRYOGLOBULINEMIC VASCULITIS IN HEPATITIS C

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Introduction: Cryoglobulinemia is a systemic vasculitis of small- and medium-sized blood vessels associated with chronic hepatitis C virus (HCV). Cryoglobulins, abnormal proteins, aggregate in the blood at cold temperatures causing the deposition of immune complexes on endothelial surfaces leading to vascular inflammation- most commonly in the skin, kidneys, and peripheral nerves. Although patients may be asymptomatic, the typical triad includes: purpura, muscle pain, and arthralgia.

Case Description: A 71-year-old African American man presented to the emergency department due to an episode of syncope with a subsequent fall. He reported no injuries from the loss of consciousness. He had a syncopal episode a week prior due to dehydration. Review of symptoms and physical exam were positive for fatigue, diarrhea, and tachycardia. Given his recent history of syncope, he was admitted for further evaluation.

His complex medical history includes syncopal episodes, atrial fibrillation, deep vein thrombosis, pulmonary embolism, HCV with cryoglobulinemic vasculitis, liver cirrhosis, prostate and bladder cancer, along with current hepatocellular carcinoma for which he is receiving radiation therapy; which tends to cause a rash. Upon admission, he developed fever and persistent tachycardia that required treatment with cefepime after acetaminophen and fluids were ineffective. He then developed an erythematous, purpuric, and urticarial rash. Despite the replacement of cefepime with vancomycin, his rash and pruritus spread from his arms bilaterally to his legs. The patient then refused all antibiotics. On day 3 of admission the patient presented with chills and a worsening rash. The patients history revealed a similar rash with the diagnosis of leukocytoclastic vasculitis secondary to cryoglobulinemia due to underlying HCV. It is likely that he has flares following radiation therapy. Treatment began conservatively with a topical steroid.

Discussion: The complexity of this case was due to the patients comorbidities leading to a broad differential. Despite his history of HCV, cryoglobulinemia was lower on the differential due to the onset of symptoms directly after cefepime. Diagnosis of cyroglobulinemia should be suspected in patients with HCV and a newly developed rash. This patient mentioned that he experiences flares of this rash after each radiation session, which has been minimally reported in other patients. This case highlights the importance of doing a comprehensive review of the patients history as well as the potential association of radiation therapy with cryoglobulinemia and HCV.

73) IS A PUFF OF SMOKE CAUSING THIS SEIZURE? LET'S BYPASS IT!

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Introduction: Moyamoya disease is a vascular disorder characterized by bilateral occlusion of the arteries around the circle of Willis (CoW), resulting in the formation of prominent collateral arterial circulation which appears like "puff of smoke in the air", the Japanese meaning of moyamoya, in an angiogram. There are several stages of moyamoya, starting from narrowing to complete blockage of the internal carotid arteries. Clinical manifestations typically include transient ischemic attack along with ischemic and hemorrhagic stroke and, rarely, seizures as in our case.

Case Description: A 39-year-old female with a history of hypertension, reasonably controlled type 2 diabetes mellitus, and transient ischemic attack, was brought in from an outside hospital for further evaluation of the first-episode of a seizure. Angiography revealed stenosis in the posterior circulation of her CoW with significant collateralization, a characteristic finding in moyamoya. She was placed on aspirin as her neurological scan showed acute and subacute infarcts, which could have been due to a vasculitic syndrome or moyamoya. Vasculitic syndrome was less likely given her overall clinical picture coupled with a normal LP finding, which was unremarkable for any signs of inflammation that would otherwise be seen in vasculitis. She subsequently underwent 2 staged superficial temporal artery to middle cerebral artery (STA-MCA) bypass starting on the left and then on the right side. The patient has improved greatly since her surgeries and has only had one seizure episode since. She is now well controlled on levetiracetam and aspirin, but could not tolerate statins due to myopathy.

Discussion: This discussion not only illustrates a rare case of moyamoya disease, but also a less common presentation as manifested by her seizures. The typical clinical manifestations of moyamoya include transient ischemic attack (TIA), ischemic stroke, and hemorrhagic stroke. Children commonly present with ischemic stroke or TIA while adults present with hemorrhagic stroke. The rate of epilepsy is also more frequent in younger populations as consistent with our case. The diagnosis of moyamoya is made by identifying bilateral stenosis or occlusion of the internal carotid artery or middle cerebral artery via magnetic resonance angiography. Treatment begins with aspirin and if there is any evidence of low cerebral blood flow then revascularization surgery is useful as in our case.

74) PULMONARY VENO-OCCLUSIVE DISEASE ASSOCIATED WITH LIMITED SYSTEMIC SCLEROSIS

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Introduction: Pulmonary Veno-Occlusive Disease (PVOD) is rare subgroup of Pulmonary Arterial Hypertension (PAH), and is associated with a particularly poor prognosis. Occlusion of the pulmonary veins causes similar symptoms and diagnostic findings as other forms of Group 1 Pulmonary Hypertension. However, PVOD responds poorly, and edema can even worsen, when vasodilator treatment for PAH is initiated. Early diagnosis is essential for managing PVOD. We present a case of Group 1 Pulmonary Hypertension associated with Systemic Sclerosis and PVOD phenotype.

Case: A 56-year-old male with a history of scleroderma complicated by Raynaud's phenomenon and digital ulcerations (treated with sildenafil), congestive heart failure (CHF), and chronic kidney disease was admitted with acute hypoxic respiratory failure requiring oxygen via High Flow Nasal Cannula (HFNC). His symptoms included 6 months of progressive dyspnea not responsive to treatment for CHF or pneumonia. A chest CT indicated limited systemic sclerosis and pulmonary hypertension. Right Heart Catheterization (RHC) showed elevated mean pulmonary artery pressure (mPAP), normal post-capillary wedge pressure (PCWP), and elevated pulmonary vascular resistance (PVR) diagnosing Group 1 Pulmonary Hypertension. The CT also showed pulmonary edema and septal thickening suggestive of PVOD phenotype. He received diuresis, and sildenafil was discontinued. Vasodilator treatment typically used for PAH was discussed, but not initiated due to risk of worsening pulmonary edema in the setting of PVOD. The patient was weaned from HFNC to 8L of O2 via facemask, but due to limited treatment options, he decided to discharge with hospice.

Discussion: PVOD is a rare subgroup of PAH and is likely underdiagnosed as the presentation is similar to other subgroups. This case illustrates the nonspecific presentation and rapid progression of PVOD symptoms. Even with imaging, it is commonly confused with heart failure, thromboembolic disease, or parenchymal lung disease. RHC values in PVOD are similar to typical PAH including elevated mPAP and normal PCWP. CT imaging with findings of venous congestion including septal thickening and ground-glass opacities in the absence of left heart failure can suggest PVOD. Worsening pulmonary edema with initiation of pulmonary vasodilators is highly suggestive. Therefore treatment options are limited and patients require early diagnosis in order to address the underlying cause of PVOD.

75) HEMMORHAGIC SHOCK IN CIRRHOSIS FROM AN ATYPICAL MALIGNANCY

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Introduction: Primary hepatic angiosarcomas are rare, representing less than 1 percent of primary liver malignancies. In contrast, hepatocellular carcinoma accounts for 85 percent of all primary liver malignancies and develops in up to one-third of patients with cirrhosis. We report an uncommon etiology of hemorrhagic shock in a patient with multiple liver lesions and background of cirrhosis.

Case: A 70 year-old man with heart failure, internal cardiac defibrillator, atrial fibrillation with use of anti-coagulant, and cirrhosis, was admitted for undifferentiated shock. He endorsed fevers, abdominal pain, nausea, and lightheadedness. Upon presentation, the patient was afebrile and hypotensive. Laboratory results demonstrated leukocytosis, anemia (hemoglobin 7 mg/dL), and elevated lactate and brain natriuretic peptide. Initial chest and abdominal radiography was unrevealing. He was resuscitated with fluids and packed red blood cells, started empirically on broad-spectrum antibiotics, and briefly required norepinephrine for refractory hypotension. Workup for cardiac and infectious causes of shock were unrevealing, with the exception of an infiltrate on chest computed tomography (CT) consistent with a diagnosis of community acquired pneumonia. CT of the abdomen demonstrated extensive infiltrative, hypervascular, and necrotic hepatic lesions, with hepatic capsule rupture and resultant hemoperitoneum. Diagnostic paracentesis was consistent with hemoperitoneum. Due to ongoing blood loss, hepatic embolization was completed, and hemoglobin subsequently remained stable. Pathology was consistent with hepatic angiosarcoma. Due to poor functional status and advanced malignancy, the patient was discharged with hospice care.

Discussion: Primary hepatic angiosarcoma is a rare malignancy associated with a poor prognosis, which results from the aggressive nature of disease, diagnosis late in the disease course, and limited treatment options. Though surgical resection is curative, most patients are not candidates due to advanced disease at time of diagnosis. Palliative chemotherapy and transarterial catheter embolization remain mainstays of treatment. Due to the vascular nature of the tumor, hemoperitoneum and hemorrhagic shock are common complication and a leading cause of death in primary hepatic angiosarcomas.

76) IgA VASCULITIS: NOT JUST FOR KIDS

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Introduction: Immunoglobulin A (IgA) vasculitis, formerly known as Henoch-Schönlein purpura, is a small-vessel vasculitis typically diagnosed in children. The classic tetrad of findings includes palpable purpura, arthralgias, abdominal pain, and renal disease. We report a classic presentation of IgA vasculitis in an older adult and discuss risk factors and management.

Case: A 78 year-old man with history of lung adenocarcinoma in remission, metabolic syndrome, and osteomyelitis presented with one week of abdominal pain, watery diarrhea, and anorexia. He also had a non-pruritic, purpuric, palpable rash, peripheral edema, and upper extremity arthralgias. Laboratory results demonstrated elevated creatinine and C-reactive protein, but otherwise infectious and rheumatologic studies were unremarkable. A presumptive diagnosis of IgA vasculitis was made, and a skin biopsy was performed, which demonstrated leukocytoclastic vasculitis and IgA on immunofluorescence, confirming the diagnosis. The patient was started on high-dose prednisone, with rapid improvement in his symptoms and resolution of his acute kidney injury, the latter of which was attributed to volume depletion rather than glomerular disease. Despite glucocorticoid use, the patient's abdominal pain reoccurred, and he developed hematochezia. Colonoscopy demonstrated mucosal changes consistent with vasculitis. High-dose intravenous methylprednisolone was administered, with resolution of symptoms, and the patient was discharged on a prednisone taper. He recovered fully, without symptom recurrence or development of renal disease

Discussion: Though IgA vasculitis is less common in adults, renal manifestations are more frequent and severe in older populations. Several inciting factors have been implicated leading to immune complex deposition. Antecedent upper respiratory tract infection with Group A Streptococcus spp. is common in children but infrequent in adults. There are case reports of delayed onset IgA vasculitis after antibiotic use and an association with osteomyelitis, both of which were present in our patient. The mainstay of therapy for IgA vasculitis is supportive. Glucocorticoids are commonly administered, but data is inconclusive regarding whether these alter the course of disease and/or prevent renal disease occurrence or progression.

77) MANAGEMENT OF ARDS THROUGH THE LENS OF COVID-19

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Introduction: Acute respiratory distress syndrome (ARDS) is a systemic inflammatory state characterized by diffuse alveolar damage, hypoxic respiratory failure, within one week of clinical insult, and bilateral infiltrates not primarily from heart failure. Management focuses on reversing the inciting cause and lung protective ventilation. Here we present a relatively new cause of ARDS through SARS-CoV-2 infection causing COVID-19.

Case: A 59-year-old non-smoking female with asthma presented to the emergency department with two weeks of nasal congestion and cough progressing to fevers, chills, and myalgias. Laboratory values were significant for leukocytosis, lymphopenia, elevated procalcitonin, mild transaminitis, negative influenza and RSV PCR, but positive SARS-CoV-2 nasal PCR. She was admitted and treated initially with ceftriaxone and azithromycin for possible pneumonia and prednisone for possible asthma exacerbation. Unfortunately, her respiratory status continued to decline over the subsequent days with worsening bilateral infiltrates, requiring intubation, neuromuscular blockade, epoprostenol, intermittent proning, and aggressive diuresis. Lung compliance was 30 mL/cmH2O 24 hours after intubation and a high-PEEP (titrated to 12mmHg in the first 24 hours) ventilation strategy was used. After 15 days of mechanical ventilator the patient was extubated and later discharged from the hospital.

Discussion: COVID-19 may cause various ARDS phenotypes, including an atypical, relatively high compliance (>50 mL/cmH2O) phenotype with V/Q mismatch as the predominant pathophysiologic state. As with our patient, a 'typical' lower compliance ARDS phenotype (<40 mL/cmH2O), is seen in 20-30% of COVID-19 ICU admissions. The cause for our patient's more severe phenotype is unclear, though possibly related to concomitant bacterial pneumonia. The patient was treated per ARDSnet lung protective ventilation with improvement in oxygenation during periods or proning. The range of respiratory pathopysiology in COVID-19 patients points to the importance of understanding respiratory mechanics and adapting the ventilation approach to each patient.

78) APPLYING THE BIOPSYCHOSOCIAL MODEL TO THE DOMESTIC VIOLENCE PATIENT

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According to the NIH, physical injury is defined as a serious injury to the body, while emotional injury results from a stressful or life-threatening situation. These types of injury are not mutually exclusive and frequently occur simultaneously for the patient. In a recently published Annals of Emergency Medicine special edition on Social Emergency Medicine, Stephen Hargarten discusses the idea that in order to manage and prevent this chronic disease burden on injured patients we need to address the challenges they face. A recent pilot study interviewing DV patients in the emergency department (ED) found that healthcare providers had care gaps. For example, the study demonstrated that there is still a lack of screening for patients presenting with potential signs of abuse, such as a human bite wound. It also showed that when screening was done it was typically not done in a private or secure manner, something that is important for the provider-patient relationship. A literature review was conducted with journal articles including "domestic violence", "intimate partner violence" and "biopsychosocial" model from 2000-2020. Results showed psychological stress throughout one's life, or chronic exposure to environmental challenges, can have consequences regarding the vulnerability of DV patients to future illnesses. Physical and psychological abuse are linked to long term endocrine dysregulation. They are also associated with financial and work-related problems. The biopsychosocial model provides conceptual framework to incorporate social care workers into delivery of health care. This is crucial in the ED as providers face numerous barriers such as time constraints and limited resources to provide comprehensive care to patients with complex psychosocial needs. Integrating social workers into the ED team can be the first step to appropriate care and follow-up DV patients need. While social workers are great help to the ED team, they are often not the first provider interacting with the patient. As such, the initial provider needs to be trained and knowledgeable in screening and treating DV patients in the ED as well as the proper role of clinical social workers. This literature review discusses numerous examples of how healthcare providers can begin to train their clinical decision making by adding in the biopsychosocial model when a complex patient presents to them. A major point being that many times DV patients often present to the ED with chronic trauma, not just the acute presenting physical injury. We challenge providers to look beyond the bruises and lacerations and begin to think about how integrating biopsychosocial care can promote healing and prevent recurrences of these tragic events.

79) VITAMIN B12 DEFICIENCY PRESENTING WITH FREQUENT FALLS IN ELDERLY WITH DIABETES

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Introduction: Vitamin B12 deficiency is a common and underappreciated cause of neuropathy. If left untreated, this deficiency can cause severe neuropathy, and megaloblastic anemia. Its diagnosis especially in patient with diabetes in this part of the world where vitamin D deficiency is ubiquitous is challenging as all of these could cause neuropathy. If the patient is on Metformin as well, it would add up to further diagnostic dilemma as Metformin can also contribute to vitamin B12 deficiency.

Case Description: An 88 Y Caucasian female with history of hypertension, type II diabetes mellitus and vitamin D deficiency presenting to Froedtert Hospital from independent living facility after a ground level fall secondary to dizziness and was found to have right proximal femur fracture. She denied any chest pain, loss of consciousness, headaches, or paresthesia, or painful neuropathy prior to the fall. She underwent ORIF of right proximal femur with orthopedic surgery. Her diabetes was relatively well controlled on Metformin, Glimepiride and Sitagliptin with a last A1C of 7.8% few months back. Her serial ECGs with troponins and 48 hour tele were unremarkable. Her post-operative day one lab revealed new acute blood loss anemia with hemoglobin of 7.8 with baseline hemoglobin of 14 on admission. Further investigation revealed a marginal macrocytosis with MCV of 96 at admission, trending worse from recent past few months, warranting further work-up. She was found to have a low vitamin B 12 level of 203, and low 25-hydroxy-vitamin D of 23.8 despite taking 2,000 units vitamin D3 daily for one month. Her presentation of frequent fall with loss of balance in absence of paresthesia and painful neuropathy was consistent with vitamin B12 deficiency rather than vitamin D deficiency. In addition to stopping metformin, we started her on intramuscular B12 injections. Her symptom of dizziness has resolved and she has not had any more reported falls since this hospital encounter for 4 months now. Her improving symptoms after B12 injection verified our clinical diagnosis of B12 deficiency.

Discussion: Metformin related vitamin B12 deficiency, diabetic polyneuropathy and vitamin D deficiency all can cause potentially reversible neuropathy. While targeting for strict diabetic control has not shown to improve overall outcome in elderly population with diabetes, reasonable diabetic control tailoring to the individual patient and identification of vitamin B12 and vitamin D deficiency is critical to early institution of appropriate therapy and prevention of fall.

This case highlights the need for future prospective studies to identify the role of each of these commonly encountered clinical etiologic factors of fall in elderly patient.

80) NEUROASPERGILLOSIS IN SETTING OF PROLONGED STEROID USE IN AN OTHERWISE IMMUNOCOMPETENT PATIENT

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Introduction: Aspergillus is a ubiquitous fungi that most frequently causes pulmonary or cutaneous infections. Invasive pulmonary infection and extrapulmonary infection like neuroaspergillosis is rare but usually occurs in severely immunocompromised individuals receiving high dose corticosteroid or cytotoxic chemotherapy or in those with prolonged neutropenia.

Case Description: 54 yo female with history of HTN, alcoholic cirrhosis and recent hospital stay for myositis presented to Froedtert hospital with generalized weakness and decompensated liver failure in setting of high dose steroid prescribed for her biopsy proven statin induced non-necrotizing myopathy. She had no complaints of fever, cough or difficult breathing. Spontaneous bacterial peritonitis was ruled out, diuresis was started, and continued on steroid taper and was notably on 30 mg prednisone per day along with bactrim for PJP prophylaxis. She initially improved with diuresis but on hospital day seven, she became increasingly lethargic and minimally responsive. A head CT showed areas of ischemia in the posterior fossa while subsequent MRI revealed areas of vasogenic edema from multiple hemorrhagic parenchymal lesions involving the cerebral hemispheres and posterior fossa structures and an evidence of brain stem displacement. Patient was transferred to neuro ICU, undergone emergent external ventricular drain placement followed by L posterior fossa decompression next day. Initially the lesions were thought to be metastatic but pathological review and culture revealed Aspergillus fumigatus. Further body CT revealed a 6mm mass like density in the lower lobe of the left lung and mini-BAL confirmed Aspergillus, likely focus of the initial infection. Patient was started on voriconazole with gradual improvement. At the time of discharge to sub-acute rehab, the patient's mental status had returned to near baseline.

Discussion: Adverse effects of glucocorticoid therapy are surprisingly common and can be life-threatening. Our patient did have a valid indication for steroid and was appropriately being tapered to avoid complications. Her vulnerability is attributed to the complex dysregulation of immunity caused by glucocorticoids in setting of already weakened immunity in cirrhosis with likely complement deficiency. As unfortunate as her acute intracranial events were, the emergent need for debulking and subsequent pathologic and microbiologic evaluation lead to the diagnosis of invasive Aspergillosis.

81) PERIPARTUM PRESENTATION OF A RAPIDLY PROGRESSING CAPILLARY HEMANGIOMA OF THE CAVERNOUS SINUS

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This patient was referred for neurosurgical evaluation following a three-week history of progressive right eye ophthalmalgia with subsequent ptosis and diplopia. She further developed facial pain and hypesthesia, also on the right side. Prior workup at an outside institution identified an avidly enhancing sub-centimeter mass on MRI located in the right cavernous sinus. Malignancy was ruled out by lumbar puncture.

The initial differential diagnosis included meningioma, lymphoma, inflammatory disease, and/or granulomatosis. Initially, conservative management was attempted using oral steroids. The patient did not improve, and a biopsy was collected for pathology.

On histological examination, the lesion was highly vascular and comprised of many thin-walled capillary-like structures in close approximation. Endothelial markers ERG, CD34, and CD31 were positive. At this point, the diagnosis of capillary hemangioma was made.

Capillary hemangiomas, by nature, tend not to progress quickly. The most proximate explanation for the unusually quick progression of symptoms in this patient was her recent pregnancy. At the time of presentation to MCW Neurosurgery, she was approximately 5 weeks post-partum. We suspect that this tumor grew rapidly during pregnancy and the post-partum period. In support of this, the MIB proliferation index was quite high at 20% at the time of biopsy. While hormones in pregnancy do play a significant role in tumor proliferation in some cases, pathology did not demonstrate expression of progesterone or estrogen receptors in this patient. This appears to be consistent with the literature with several extant reports of rapid symptom progression related to intracranial capillary hemangiomas that do not robustly express hormone receptors.

Using an endoscopic endonasal approach to the cavernous sinus, the tumor was completely resected, and the patient shows no signs of recurrent disease at one-year follow-up.

82) DIAGNOSIS AND TREATMENT OF MAY-THURNER SYNDROME IN A GERIATRIC PATIENT

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Introduction: May-Thurner syndrome (MTS) is described as extrinsic compression of the left common iliac vein by the right common iliac artery against the lumbar vertebrae. While most MTS patients are asymptomatic, some develop deep vein thrombosis (DVT) from venous flow obstruction. Incidence and prevalence are unknown but estimated to occur in 2-5% of patients with lower extremity venous disease. Symptomatic MTS presents in the second to fourth decade of life with few case reports describing initial onset in geriatric patients.

Case: An 82-year-old female with past medical history of hypertension presented with acute onset of left lower extremity (LLE) swelling and pain. No prior history of DVTs or pulmonary embolism, recent travel or surgery, hormone use, coagulation disorders, leg trauma or malignancy. Patient lives in own home and is functionally independent. Former casual smoker but quit 50 years ago. Upon admission, patient was afebrile and in no respiratory distress. COVID-19 testing negative. On physical exam, patient had unilateral LLE 2+ pitting edema with erythema and mildly tenderness. LLE ultrasound revealed extensive femoropopliteal, peroneal and posterior tibial DVT extending into the external iliac vein. Initially treated with heparin drip. CT chest, abdomen and pelvis with contrast showed extrinsic compression of the proximal left common iliac vein by the right common iliac artery. Initially treated with heparin drip. Interventional radiology performed a left iliofemoral pharmacomechanical thrombectomy resulting in successful restoration of blood flow. Area of stenosis of iliac vein was treated with bare metal stents. Patient was discharged on dual antiplatelet therapy and enoxaparin with plan to transition to rivaroxaban.

Discussion: Symptomatic MTS commonly presents in women and risk factors include hypercoagulable states, scoliosis, dehydration, cancer and radiation exposure. MTS can be treated with catheter-directed thrombolysis, venoplasty and/or stent placement. Post-Thrombotic Syndrome develops in 60% of iliofemoral DVTs, with symptoms appearing within the first 5 years. While the decision to pursue thrombolysis and stenting is straight forward in the typical MTS patient, this was not as obvious in our patient given her geriatric age. Given her independence and few comorbidities, intervention was elected. Our case demonstrates that symptomatic MTS can present for the first time in a geriatric patient and that careful consideration is warranted in developing a treatment plan.

83) THE RISKS OF REFLEXIVE REFILLING

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Introduction: The electronic health record (EHR) and electronic prescribing (e-prescribing) have transformed the practice of medicine. Both have led to improved efficacy and safety in medication management. However, dangers may arise when e-prescriptions requests are filled by default and when EHR medication lists are presumed accurate. In this case, our patient underwent two days of inpatient evaluation before a thorough medication reconciliation revealed that his symptoms had likely resulted from a medication that had been reflexively refilled.

Case Presentation: A 69-year-old Caucasian man presented with worsening weakness, weight loss, decreased appetite, and non-bloody diarrhea. Imaging revealed a large right pleural effusion and a non-specific colitis. Lab work up revealed significant bicytopenia, hypogammaglobulinemia, and hypolipidemia. Initial evaluation and diagnoses were focused toward causes of malnutrition and malabsorption. However, on hospital day 2, a pharmacist discovered that the patient had been taking long-term oral linezolid for unclear reasons. With cessation of linezolid, the patient's myriad symptoms resolved, and all lab values progressively normalized.

Discussion: The side effects of linezolid have been well documented and include reversible myelosuppression and gastrointestinal symptoms. However, medication reconciliation was imperative in diagnosing and treating our patient. Further, reflexive refilling of this patient's medication likely explains why he was taking linezolid for such a long period of time as other forms of automation bias are known to introduce errors in e-prescribing.

Conclusion: This case calls attention to the importance of medication reconciliation, the danger of over-reliance on EHR medication lists, and the pitfalls in not maintaining vigilance with e-prescribing. It also highlights the necessity of patient and caregiver education regarding their medications.

84) KEEP SEARCHING: WHY KLEBSIELLA BACTEREMIA WITH PNEUMONIA? CRYPTOCOCCAL MENINGITIS!

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A 65-year-old female with deceased donor kidney transplant secondary to end-stage renal disease, surgical splenectomy, and recent stroke initially presented to the hospital with confusion, productive cough, weakness, chills, and diarrhea for 2 weeks prior to admission. She was treated presumptively for macro-aspiration pneumonia given the presence of a left lower lobe opacity on imaging, leukocytosis to 30K, and dysphagia following her recent stroke. Blood cultures grew *Klebsiella pneumoniae*. Thus, her symptoms were initially attributed to aspiration pneumonia.

On the third day of admission, her confusion worsened, requiring intubation. Shortly after arrival to the intensive care unit, she began having seizures. An MRI brain was done which demonstrated increased ventricular size consistent with hydrocephalus. A lumber puncture was performed with normal opening pressure and clear fluid. However, she had marked elevations in cerebrospinal (CSF) protein and high titers of Cryptococcus neoformans CSF antigen (1:512). Amphotericin and flucytosine were initiated. Unfortunately, her mental status never improved despite antifungal treatment and serial lumbar punctures, and her Cryptococcus CSF antigen remained positive throughout her course.

Most patients who develop cryptococcal meningoencephalitis are immunocompromised, including patients with solid organ transplants and asplenia. Presentation is variable, ranging from acute to subacute. Diagnosis is made via lumbar puncture with measurement of opening pressure and CSF testing (India ink stain, PCR, and/or cryptococcal antigen). The presence of an unexplained seizure in the context of aspiration pneumonia provided the critical clue for meningoencephalitis as the cause of our patient's confusion.

At first blush, this case seemingly violates Occam's razor (or the law of parsimony) as the patient had simultaneous pathogen-proven infections. However, severely immunocompromised hosts are vulnerable to succumbing to multiple concomitant infections. Further, meningoencephalitis and dysphagia predisposed the development of aspiration pneumonia with *Klebsiella* and thus provide a unifying explanation for her dual infections.

85) FAINT OF HEART: A COMPLEX TALE OF A PARAGANGLIOMA

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Paragangliomas are neuroendocrine tumors from the extra-adrenal autonomic paraganglia and are mostly benign however 20% of cases can be malignant. Presentation ranges from asymptomatic, symptoms of mass effect, or catecholamine crises. 75% of these tumors are found in para aortic regions however 2% have been reported as a middle mediastinal mass.

We present a previously healthy 35 y/o male who presented to the Emergency Department (ED) for "seizure activity" and chest pain. Originally this occurred two weeks prior where his evaluation included an unremarkable laboratory evaluation, head CT, and neurology consult with a diagnosis of migraines. Given his chest pain at this visit, an EKG was performed that showed a prolonged QTc of 501 and inverted T waves in the lateral leads. In the observation unit, an echocardiogram was performed which showed a 4x4 cm oval shaped echodensity in the posterior aspect of the left atrium. This was investigated by a CT angiography of the chest that showed a 5.6 x 4 cm mediastinal mass with central necrosis recruiting arterial supply from the right coronary and bronchial artery suspicious for a paraganglioma. Further imaging of the abdomen revealed a second enhancing lesion of the aortocaval region. Broad laboratory work up was obtained including infectious and rheumatological causes however was significant for elevated nor-metanephrines, norepinephrine and dopamine. Dotatate scan confirmed the mass as a paraganglioma. His hospital course was complicated by intermittent hypertension and tachycardia controlled with alpha blockade. He was discharged with a complex follow up plan including interventional and surgical specialties for embolization and resection of both masses.

This patient showcases a rare presentation of a paraganglioma as a mediastinal mass but has many teaching points including the correct treatment of catecholamine crises, screening laboratory evaluation for neuroendocrine tumors, and the importance of continued imaging surveillance of these masses as pathology is not specific for determining malignancy.

86) ACUTE RHEUMATIC FEVER: AN OVERLOOKED DIAGNOSIS AMONG ADULTS IN THE WESTERN HEMISPHERE

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Introduction: Acute rheumatic fever (ARF) has become somewhat uncommon but it remains an important diagnostic consideration that requires timely diagnosis and treatment.

Case Description: We present a 28-year-old female who initially presented with flu-like symptoms and sore throat. After negative rapid strep and influenza tests, she was treated for viral pharyngitis with acetaminophen and ibuprofen. She presented to the emergency department (ED) the next day with worsening throat pain and difficulty swallowing. On exam, she had pharyngeal erythema and tender cervical lymphadenopathy. CT neck was negative and she was given dexamethasone and discharged. Her throat culture later grew Group A Strep (GAS) and she was started on azithromycin due to penicillin allergy. She initially had symptomatic improvement but subsequently developed severe chest pain, migratory joint pain, and rash on her forearms and returned to the ED. However, she was sent home after unremarkable workups. She returned two days later with worsening of her symptoms and her ESR, WBC, CRP, and troponin were all significantly elevated. She was admitted to cardiac ICU and started on IV vancomycin, colchicine, and naproxen for suspected ARF and myopericarditis. Heparin infusion was started for possible NSTEMI. In the CICU, she continued having chest pain, sinus tachycardia, and rising troponin (peak 7.5). CTPE, echocardiogram, and coronary angiogram were all unremarkable. Cardiac MRI showed extensive patchy edema, marked LVH, and mild hypokinesis suggesting myocarditis. The patient was sent home after the complete resolution of her symptoms. Metoprolol continued upon discharge for persistent sinus tachycardia, and colchicine and naproxen also continued. She will need to be on prophylactic antibiotics for ten years.

Discussion: Due to its low incidence and overlapping symptoms with other conditions, ARF may not be considered in the differential diagnosis early. Failure to timely treat GAS pharyngitis may lead to increased adverse outcomes and recurrent disease.

87) CARDIOMYOPATHY IN THE SETTING OF SEVERE ANEMIA

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Introduction: Severe iron deficiency anemia (IDA) can have a profound effect on cardiac function and is associated with left ventricular (LV) dysfunction and cardiomyocyte damage. This initially reversible damage can lead to high-output heart failure (HF) states and permanent cardiomyopathy.

Case Description: A 49-year-old woman with a history of morbid obesity status post laparoscopic adjustable gastric banding in 2011 presented to the emergency department with shortness of breath and bilateral leg swelling worsening over 2 weeks. Vitals were significant for tachycardia. Physical exam was notable for 3+ pitting leg edema bilaterally. Initial labs revealed severe IDA (hemoglobin 2.6 g/dL, MCV 67 fL, ferritin 3.6 ng/mL, iron 10 mg/dL) and elevated BNP of 2980. Acute thromboembolic disease was ruled out by CT angiogram. Transthoracic echocardiogram showed severely dilated LV, LV ejection fraction 32%, mild right ventricular systolic dysfunction, moderate mitral regurgitation, moderate pulmonary hypertension, and small pericardial effusion, confirming a novel dilated cardiomyopathy. Bleeding sources were negative for menorrhagia or colonoscopy findings. Upper endoscopies showed pseudoachalasia from a partially slipped gastric band and erosive esophagitis. Band was loosened to relieve outlet obstruction. Cardiac catheterization ruled out underlying ischemic causes. Micronutrient and metabolic panels were explored. Folate, cobalamin, and TSH were normal, Vitamin D 25-OH levels were low (19.1 ng/mL), and celiac antibodies were negative. Carnitine, copper, and selenium levels were within normal limits. Thiamine was low (50 nmol/L). Mercury, zinc, and niacin levels were in process. Five units of packed RBCs were given during hospital stay. Patient's hemoglobin was treatment-responsive to 9.1 g/dL at time of disposition. Patient received iron, furosemide, lisinopril, carvedilol, pantoprazole, and sucralfate therapies.

Discussion: IDA is the most common cause of anemia in the U.S. Though the exact pathogenesis is unknown, severe IDA can result in LV dysfunction and overt HF due to low iron stores in cardiomyocytes, hemodilution, increased sympathetic tone, or decreased delivery of oxygen to myocardial cells. Pathophysiological links include underlying renal dysfunction or a concomitant lack of micronutrients essential for myocardial cell function. To avoid irreversible damage and cardiomyopathy, patients with concern for IDA should be routinely tested, supplemented, and monitored to avoid the demonstrated severity of chronicity.

88) AN UNUSUAL PRESENTATION OF DISEMMINATED HERPES ZOSTER

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Herpes zoster (HZ), or shingles, is caused by reactivation of varicella zoster virus (VZV). HZ is largely a clinical diagnosis. VZV antigen or PCR for VZV DNA in cells from the base of lesions can be used to confirm the diagnosis when there are atypical presentations. The HZ rash generally starts as maculopapular lesions, which evolve into vesicles and form scabs within 10 days. The course of the disease is usually accompanied by unilateral pain that follows a dermatome. This pain may precede the eruption and may persist for weeks or months. The development of herpes zoster is normally suppressed by the immune system, reactivation tends to occur in people whose immunity is weakened, such as older or immunocompromised individuals. In the immunocompetent host it can also lead to aseptic meningitis, bacterial superinfection of skin lesions, bell's palsy, HZ Opthalmicus and postherpetic neuralgia. In this case we report an unusual presentation of HZ. An 86-year old man presented to the hospital with complaints of rash, swelling, loss of sensation and progressive motor weakness in his right upper extremity. Upon examination dry tense bullae in a vesicular-like pattern distributed along the C5-C7 dermatome in his right upper extremity. The patient had loss of sensation in his right upper extremity along the C5-C7 dermatomes and the patient was unable to abduct at the glenohumeral joint. The pain was unable to flex or extend at the elbow and unable to flex or extend his first three PIP, DIP and MCP joints. However, the patient was able to slightly abduct and adduct all fingers. A cervical spine MRI was done showing no cord enhancement which helped rule out myelopathy. PCR analysis of blisters tested positive for HZ. Spinal fluid analysis revealed lymphocytic pleocytosis and PCR was positive for HZ, confirming the diagnosis. A few days prior to the patient's hospitalization he was given prednisone by an orthopedic surgeon for possible radiculopathy and it is presumed to have made him immunocompromised, leading to a disseminated HZ infection. The patient was subsequently started on IV acyclovir and the lesions improved over a 7-day inpatient course. He was discharged with oral acyclovir for 7 more days and follow up with his primary care provider and neurologist. Based on the physical exam, lab findings, and neurology opinion the pattern of involvement fits plexopathy affecting the upper and middle trunks of the brachial plexus. One of the unique parts of this case was the unusual presentation of symptoms. The patient has not had any pain since the onset of this rash and did not feel pain throughout the process. He only lost sensation to touch in the affected dermatomes. We believe this loss of sensation has to do with the associated swelling in the affected areas leading to compression of local nerves.

89) TO DELAY OR NOT TO DELAY (CARDIAC SURGERY IN TIMES OF COVID-19)

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Cardiac myxomas are among the most common benign heart tumors and are frequently found in the left atrium. Primary cardiac tumors are quite rare and, according to an autopsy study, have an incidence of <0.1%. Although benign, myxomas can be life-threatening because they manifest as large space-occupying lesions in the heart. If not diagnosed promptly, these benign tumors can be fatal. We present a case of a left atrial myxoma and discuss the safety risks associated with delaying surgical intervention in the midst of the COVID-19 pandemic. A 38-year-old woman presented to the emergency department with a swollen arm for three days. The patient had a history of daily heroin use and multiple syncopal spells over the last couple of months. Physical examination revealed a faint 1/6 holosystolic murmur heard best at the apex along with mild wheezing bilaterally. Due to the patient's significant history of daily IV drug use, a transthoracic echocardiogram was ordered which revealed a mass in the left atrium protruding into the left ventricle. Cardiothoracic surgery was consulted in the hospital to discuss her surgical options. The patient had a cardiac MRI without contrast which showed a 5.3 X 4.2 X 5.7 cm left intraatrial mass that was adherent to the interatrial septum. Cardiac surgery was recommended for resection of the atrial mass; however, the surgery was delayed as the patient tested positive for SARS-CoV-2. This case report discusses the safety risks associated with delaying surgical intervention in the midst of the COVID-19 pandemic. The COVID-19 pandemic has caused millions of deaths worldwide. There has been a tremendous strain on the healthcare system, including shortage of personal protective equipment and ICU bed capacity. Most non-urgent surgeries and procedures have been delayed or canceled. Our patient tested positive for COVID-19 but was asymptomatic so was not hospitalized. There are currently no guidelines on when/if to delay surgery in a patient who has SARS-CoV2. The SARS-CoV2 is predominantly transmitted by droplets (5-10 microns); however, it can become aerosolized during certain conditions termed "aerosol generating procedures". When aerosolized, viral particles become airborne in droplet nuclei that are less than 5 microns in size, they can travel greater than 1 meter, and remain airborne for up to 3 hours. In cardiac surgery, for example, this would put the medical personnel involved in the surgery at a high risk of contracting the virus. Our current state of knowledge about the role of aerosols in the transmission of SARS CoV2 warrants urgent attention. In this patient, the risks versus benefits of delaying surgery were discussed by the heart team. The death rate associated with not performing surgery on a myxoma leads to a 0.005% risk of sudden cardiac death and a 0.5% risk of stroke. Data from the CDC showed a case rate fatality of 6% in the United States. Because this patient did not have a history of stroke or thromboembolism and her symptoms were stable, this surgery was deemed non-urgent. Also, when taking into consideration the low risk of mortality from myxoma versus the higher risk of mortality from SARS-CoV2, the heart team decided to delay this surgery.

90) ALTERED MENTAL STATUS IN 'BRITTLE' DIABETIC KETOACIDOSIS

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Brittle diabetes is the colloquial name for a phenotype of type I diabetes that manifests with high glucose variability. It adds an extra layer of difficulty to management of a disease that affects nearly 1 in 300 people in the United States. A 73 year old man with brittle type I diabetes was admitted to the hospital after being found unresponsive at home. He was determined to be in diabetic ketoacidosis (DKA) with an anion gap of 28 and blood glucose of 1087 mg/dL. After initial resuscitation he remained obtunded and minimally responsive. He was managed with standard DKA protocol and after his blood glucose and anion gap normalized he was transitioned from continuous infusion to subcutaneous insulin. Despite this, he continued to fluctuate between being unresponsive and heavily delirious. Glucose levels remained extremely labile and even with endocrinology consultation would vary between 50 and 450 mg/dL within a matter of hours. CT imaging of the head was obtained and revealed no evidence of infarction or cerebral edema. It was felt that the patient's ongoing large glucose swings were prolonging his encephalopathy so he was restarted on continuous IV insulin for better control of his blood sugars. With this, his mental status rapidly improved until the patient was felt to be at his baseline and was transitioned back to subcutaneous insulin at endocrinology's instruction. This time, his mental status remained stable and he was able to be discharged from the hospital without further issue.

This case illustrates dangers that high glucose variability can pose in management of diabetic patients with DKA. The large fluctuations in the patient's glucose levels caused prolonged osmotic insult and metabolic encephalopathy. Recognizing this made the difference between the patient being able to return home instead of being admitted to a nursing facility.

91) DIFFUSE SUBCUTANEOUS EMPHYSEMA AND MASSIVE PNEUMOMEDIASTINUM IN ACUTE RESPIRATORY DISTRESS SYNDROME

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Introduction: Pulmonary barotrauma is a consequence of elevated trans-alveolar pressures. Risk factors for development include positive pressure mechanical ventilation, decreased lung compliance, and dynamic lung hyperinflation. Lung-protective ventilation strategies, characterized by low tidal volumes and plateau pressures, are the mainstay of prevention and treatment. For patients with obstructive lung disease, intrinsic positive end-expiratory pressure should also be minimized to prevent dynamic hyperinflation. Despite proper ventilator management, the incidence of barotrauma in ARDS is approximately 10 percent.

Case Description: 57-year-old woman with chronic obstructive pulmonary disease (COPD) developed severe acute respiratory distress syndrome (ARDS) after a viral infection. The patient was intubated for management of hypoxemic respiratory failure but self-extubated. She required re-intubation with deep sedation and paralysis for refractory hypoxemia, after which she developed mild chest crepitus that rapidly progressed to overt distention of her face, neck, trunk, and extremities. Radiographic and computed tomographic imaging demonstrated diffuse subcutaneous emphysema, a large pneumomediastinum, and a small pneumothorax, which had resulted from direct airway injury and pulmonary barotrauma. She was managed conservatively with lung-protective mechanical ventilation. However, she ultimately expired from severe ARDS

Discussion: Early recognition of barotrauma is essential to prevent further ventilator-associated harms. Rare cases of tension pneumomediastinum and compartment syndrome have been reported, which require emergent intervention. However, barotrauma is typically well tolerated from a hemodynamic and pulmonary mechanics standpoint. The majority of patients are managed conservatively, specifically by adjusting ventilator settings to further limit plateau pressure (e.g., by decreasing tidal volume and/or positive end-expiratory pressure) and treating the underlying pulmonary disease. Nevertheless, pulmonary barotrauma portends a poor prognosis, as it is typically a consequence of severe pulmonary disease.

92) A CASE OF INFECTED AORTOENTERIC FISTULA PRESENTING AS SEPSIS

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A life-threatening complication of aortic graft is aortoenteric fistula (AEF). We present a case of AEF presenting as sepsis in the absent of overt GIB. Repeated abdominal imaging did not reveal AEF, but eventual endoscopy showed aortic graft ulceration into the duodenum. Our case highlights the importance of having a low threshold to perform endoscopy in any critically ill patient with a history of an aortic graft.

A 72-year-old male with abdominal aortic aneurysm and chronic graft infection complicated by vertebral osteomyelitis presented with worsening chronic back pain. Vital signs were normal, but hemoccult was positive. Test results showed white blood cell count 10.3 K/uL, hemoglobin 7.3 g/dL, erythrocyte sedimentation rate 79 mm/hr, and C-reactive protein 17.7 mg/dL. Computed tomography angiography (CTA) showed no evidence of aortic endograft leak or AEF. Blood culture grew *Enterobacter cloacae*, he was started on intravenous ertapenem. Esophagogastroduodenoscopy (EGD) showed a nonbleeding cratered lesion resembling an aortoenteric graft ulceration into duodenum.

Patient underwent exploration of the infected aortic graft, ligation of the infrarenal aorta, transverse duodenal resection with anastomosis. Postoperatively, he became severely acidotic with a pH of 7.05, potassium 8.6 mmol/L, lactate 16 mmol/L, and no Dopplerable pulses on left lower extremity. Despite aggressive interventions, including continuous renal replacement therapy, patient expired the next morning. A surgical specimen obtained from the explanted aortic graft later grew *Enterobacter cloacae*.

AEF can be either primary which arises de novo, whereas secondary (SAEF) occurs following any aortic reconstruction. GIB due to rupture of the aorta into the duodenum is the most common presenting symptom of AEF but our patient instead presented with sepsis without overt GIB, and repeated negative abdominal imaging. This case report emphasizes the importance of having a low threshold to perform EGD in patients with aortic graft presenting with sepsis.

93) A HIDDEN THREAT: A CASE OF STAGE IV, EARLY-ONSET COLORECTAL CANCER

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We report a case of metastatic colorectal adenocarcinoma in a 45-year-old with liver metastasis upon initial diagnosis of CRC arising within a 20-mm-sized pedunculated polyp in an otherwise healthy male with no genetic predisposition.

A 45-year-old white male with no significant medical history presented for an annual visit with a concern of bright red stool for 2 years. Colonoscopy showed a 20-mm-sized pedunculated polyp in the distal descending colon and a 5-mm-sized sessile polyp in the proximal sigmoid colon. On histologic examination, the 20-mm-sized pedunculated polyp showed a small dot of well-differentiated intramucosal adenocarcinoma arising within the background of a large tubular adenoma with high-grade dysplasia. Abdominal and pelvis computed tomography showed a 1.6 cm hypoattenuating lesion in the liver. Core needle biopsy was performed with finding of moderately differentiated metastatic adenocarcinoma consistent with colorectal cancer. Genomic finding showed mutation in TP53 p.V274G, variant allele frequency 66%, consistent with primary colorectal adenocarcinoma in the descending distal colon. Patient underwent partial liver resection with normal intra-operative survey for overt malignancy in abdominal cavity and undergoing chemotherapy.

Early-onset colorectal cancer is generally defined as all CRCs diagnosed before the screening age, i.e. < 50 years of age. In 2010, CRC among patients < 50 years accounted for 4.8% and 9.5% of colon and rectal cancers, respectively. EO-CRCs are frequently left sided, involving the rectum and are poorly differentiated G3 tumors. Our patient had a rare presentation of EO-CRC with metastatic disease at time of diagnosis. Interestingly, a small adenocarcinoma was hidden within a largely benign polyp, which had already spread to the liver. Our case report serves as a cautionary tale to not overlook CRC symptoms in patients < 50 years of age and to screen for metastatic disease as EO-CRC is usually diagnosed as stage III or IV.

94) LYME NEUROBORRELIOSIS: A DIAGNOSTIC STITCH IN TIME THAT CAN SAVE NINE!

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Introduction: Lyme disease, the most common tick-borne infection in North America is a multi-systemic infectious disease that involves the nervous system in about 10 to 15% of infected individuals. Early neurologic Lyme disease can present as a triad of lymphocytic meningitis, cranial neuropathy and sensory or motor radicular neuritis.

Case Presentation: A 62 YO/F, Wisconsin resident without significant neurologic history presented to the ED with right-sided sensory and motor deficits, right lower extremity neuropathic pain, left facial droop, and headache for two weeks. She denied any antecedent fever, photophobia, neck pain, fecal or urinary problems. She denied any skin rashes and did not recall any recent exposure to ticks.

A work-up to rule out stroke including neuroimaging with non-contrast CT and MRI was unremarkable and she was discharged from the ED. She was then managed conservatively but followed up with a neurologist due to persistent symptoms who recommended admission for further work-up. Repeat imaging with contrast brain and spinal cord MRI showed extensive cranial and spinal nerve enhancement. Blood counts and a metabolic penal were unremarkable and serum HSV, Lyme PCR, and other viral screens were negative. CSF showed lymphocytic pleocytosis, elevated protein, and negative viral and Lyme PCR studies.

A diagnosis of Lyme's Mennigo-radiculo-neuritis was made based on MRI findings, positive serum Lyme IgG and IgM antibody, CSF lymphocytic pleocytosis, elevated protein, and increased CNS Lyme IgG antibody index. Following diagnosis, she was treated with IV ceftriaxone initially and later transitioned to oral doxycycline. Subsequent outpatient visits revealed complete resolution of neurologic symptoms.

Discussion: This case highlights the necessity of having a clinical suspicion of neurological Lyme disease in a patient who resides in an endemic region presenting with symptoms and signs of cranial neuropathy especially with 7th nerve involvement or spinal radiculopathy. Early diagnosis will avoid costly investigations and delayed care since over 95% of many patients can be effectively treated with effective antibiotics with neurologic function restored.

95) RECURRENT DISSEMINATED BLASTOMYCOSIS PRESENTING WITH OBSTRUCTIVE URINARY SYMPRTOMS

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Introduction: Blastomycosis is a systemic fungal infection endemic in North America, caused by inhalation of the conidia of the fungi *Blastomyces species. The clinical manifestation can range from asymptomatic infection, to pulmonary or extra-pulmonary disease involving the skin, bone, central nervous system or rarely genitourinary system* (2% of cases)

Case Presentation: A 63-year-old male Wisconsin resident with a medical history of diffuse large B-cell lymphoma on remission for 12 years, hypogammaglobinemia on monthly IVIG treatments presented with one week history of fever, chills, night sweats, non-productive cough and a three day history of weak urinary stream, frequency and perineal discomfort. He denied any other systemic symptoms and had no previous history of urinary symptoms. Nine months prior, he was treated for a biopsy confirmed disseminated blastomycosis involving the lungs and skin.

He was febrile at presentation, lungs were clear, skin showed multiple violaceous non-tender nodules similar to previous skin lesions and prostate examination was unremarkable. Initial labs showed leukocytosis elevated Procalcitonin, CRP and normal PSA of 3.1ng/dl. Urinalysis showed pyuria and positive blastomycosis antigen but urine culture showed no significant growth. While in the hospital, he developed acute urinary obstruction and was catheterized.

Chest CT showed right upper segment lung consolidation and mediastinal adenopathy. Culture of respiratory secretions from BAL revealed *Blastomyces dermatitidis* which was also demonstrated on skin biopsy. He was commenced on IV amphotericin B till clinical condition improved and he was transitioned to oral Itraconazole for 12 months. Follow-up visit showed complete resolution of his urinary symptoms within 2 weeks of treatment, and he has remained asymptomatic.

Discussion: Disseminated blastomycosis is more common and severe in immunocompromised hosts and can masquerade as other disease processes and very rarely can involve genitourinary system. In an endemic area, it should be considered in the differential diagnosis in a patient with pulmonary, cutaneous or genitourinary symptoms especially in the setting of immunocompromise as this will avoid treatment errors and prevent progression of untreated infection.

96) DIFFEREATING PAGE KIDNEY AND LUPUS NEPHRITIS IN THE SETTING OF POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES)

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Introduction: Determining the exact etiology of seizures in a patient with lupus is challenging due to lupus's systemic nature.

Case Description: A 23-year-old female with a past medical history of systemic lupus erythematosus, brought to the ED by ambulance with recurrent, generalized, tonic-clonic seizures. She was intubated and admitted to the ICU where she was treated with antiepileptics and antihypertensives. Upon stabilization, she was transferred to the general medicine floor for further workup which included a renal ultrasound which demonstrated a 9.5cm retroperitoneal hematoma anterior to the left kidney. The MRI of the brain showed white matter deficits in the occipital lobes consistent with PRES.

The differential diagnosis included lupus cerebritis and PRES, caused by either Page kidney or lupus nephritis. Page kidney was less likely because the hematoma was not subcapsular as seen on the ultrasound making the likelihood of pressure on the kidney significant enough to increase blood pressure less plausible. Next, lupus cerebritis was ruled out by the absence of oligoclonal banding in the CSF. The final diagnosis was PRES secondary to lupus nephritis.

Discussion: Lupus's systemic nature muddles the determination of the exact etiology of complications as demonstrated in this case. Despite knowing that the underlying cause of this patient's condition was due to lupus, the determination of the intermediary etiology was essential to the successful treatment plan. Although Page kidney is a rare finding that was not the etiology in this case, it is important to consider after a renal biopsy while the patient is on anticoagulation therapy. Another lesson from this case is to rule out potentially dangerous etiologies, such as lupus cerebritis, even though a probable cause has been identified.

97) ACQUIRED ICTHYOSIS AS CUTANEOUS HARBINGER OF ANAPLASTIC LARGE CELL LYMPHOMA

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Introduction: Acquired ichthyosis is characterized by scaling of dry skin typically due to hyperkeratosis. It can be cutaneous harbinger of many internal diseases including certain malignancy, infections, inflammatory, and /or thyroid diseases.

Case Description: A 68 yo male with history of sarcoidosis on low dose prednisone, chronic kidney disease stage 3, normocytic anemia, paroxysmal atrial fibrillation, and type 2 diabetes was admitted to the hospital for evaluation of new onset diffuse generalized scaling rash of 1 month. Rash was present on all body surfaces in various degrees with sparing of the mucous membranes. The patient reported generalized pruritis but no pain or burning sensation. Pt also complained of drenching night sweats, fever, and 25-pound weight loss in past few months. He also complained of a prominent lymph node in left axilla which was first noticed and being monitored for the last 6 months. Physical exam revealed diffuse scaly rash and associated hyperkeratosis of palms and soles with no appreciable background erythema. Dermatology was consulted and the rash was biopsied and diagnosed as acquired ichthyosis. As acquired ichthyosis is associated with several internal malignancies including lymphoproliferative diseases, infections including hepatitis and HIV, inflammatory diseases including cutaneous ichthyosiform sarcoidosis, celiac disease and thyroid diseases, further testing was performed. The HIV study, celiac panel and hepatitis panel were all negative while recent TSH 6-month prior was normal. Flow cytometry was inconsistent with hematologic malignancy, but pan CT scan revealed a new, enlarging left axillary lymph node and new generalized lymphadenopathy--a finding highly suggestive of lymphoma. With underlying sarcoidosis remotely likely to be contributory to the disease process, core needle biopsy of left axillary LN was performed. It demonstrated anaplastic, ALK-negative, large cell lymphoma (ALCL).

Discussion: Acquired ichthyosis warrants investigation into common associations including HIV, thyroid disease, and malignancy. In this particular case, the patient presented with a concomitant lymphadenopathy. For diagnosis of lymphoproliferative disease, core needle biopsy was performed which demonstrated ALCL. Further investigation ruled out other associated conditions such as hepatitis, HIV, celiac disease and thyroid disease. Acquired ichthyosis usually improves with treatment of the underlying malignancy.

98) CORRELATION OF UNDIAGNOSED OBSTRUCTIVE SLEEP APNEA AND OBESITY WITH SEVERE COVID-19 INFECTION

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Introduction: Data suggest severe obesity (BMI ≥35) is associated with ICU admission on COVID-19 infection, OR 5.39 (confidence interval 1.13-25.64) but there is lack of enough data on association of COVID-19 and obstructive sleep apnea (OSA). In some studies, 5% of adults in western countries have undiagnosed OSA and prevalence is higher in African American compared to Caucasian.

Case Presentation: 38-years-old morbidly obese African American male (BMI 40) with unremarkable PMHx presented with shortness of breath and productive cough of 2 days duration. He had temperature of 102.1 F, RR 26 and SpO2 83% but stable BP and HR. ABG revealed PH 7.23, PO2 44, and PCO2 65. Chest X-ray revealed patchy bilateral infiltrates. COVID-19 swab by PCR was positive. Patient's oxygen demand increased from 3L/min to 15L/min with in 5 hours. Patient was transferred to ICU for acute hypoxic respiratory failure and septic shock. He was sedated and intubated, proned, resuscitated with IV fluids and vasopressors, and was put-on broad-spectrum antibiotics. Ventilator setting was adjusted per ARDS protocol. Patient was started on IV steroids, Hydroxychloroquine, Tocilizumab, and Lopinavir/Ritonavir. Despite all efforts and resuscitation, patient expired.

Conclusion: Few researchers have proposed multiple mechanisms for association between obstructive sleep apnea (OSA) and severe COVID-19 infection. These includes chronic inflammation, oxidative stress, increased expression of angiotensin converting enzyme, and intermittent hypoxia seen on OSA could exacerbate hypoxia caused by COVID-19 infection. Considering patient's BMI, African American, and history of sleep disturbance, we believe the patient might have undiagnosed OSA predisposing to poor outcome with COVID-19 infection. Additional studies are needed to clarify the impact of OSA on COVID-19 severity.

99) AN UNUSUAL CASE OF REFRACTORY HYPOKALEMIA

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Introduction: A case of refractory hypokalemia and hypertension should include primary hyperaldosteronism on the differential. If potassium supplementation fails, primary causes of low potassium including Conn syndrome should be investigated.

Case Description: A 47-year-old female with a history of hypertension presented to the ED with numbness in the hand and face. Labs were remarkable for a potassium of 2.7. Vitals were notable for severely elevated blood pressures of 241/116. CT's to rule out stroke or acute intracranial process and were negative for hemorrhage or acute infarct. The patient's numbness resolved within hours. Vascular neurology was consulted and suspected a TIA. On MRI and CT imaging several areas were suspicious for subacute and prior infarcts with evidence of cerebrovascular disease secondary to chronic HTN. Potassium was supplemented and corrected to 3.7 on the second day of admission. On the third day, serum potassium dropped back down to 2.6, and BP readings remained severely elevated despite losartan, IV and PO hydralazine, and IV labetalol. Her history revealed similar episodes of severe hypokalemia and hypertensive emergency not responsive to medications dating back to 2015. It was presumed her hypokalemia was secondary to hydrochlorothiazide which she took for blood pressure control. Though attributed to her HCTZ use, the patient reports noncompliance with her home HCTZ regimen. Other secondary causes such as diarrhea, kidney disease, and alcohol use were ruled out. The patient's history of recurrent admissions for severe hypertension and refractory hypokalemia suggested a possible primary hyperaldosteronism etiology. A central process was unlikely to be the cause given the negative brain MRI. Labs for ACTH, plasma renin activity, and aldosterone are pending.

Discussion: Conn syndrome, or primary hyperaldosteronism is a rare condition in which the adrenal glands produce excess aldosterone causing low potassium levels and elevated blood pressure. Patients with excess aldosterone are at risk of end-organ damage-especially cardiac and renal insults. Removal of an aldosterone-secreting adenoma or treatment with aldosterone antagonist has been shown to significantly decrease cardiovascular risks and may reverse renal effects. A very helpful lab in the workup includes plasma aldosterone concentration / plasma renin activity (PAC/PRA).

100) ATYPICAL HUS AND ANTI-GBM DISEASE

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Introduction: Anti-GBM disease, or Goodpasture's syndrome, is a rare autoimmune condition characterized by glomerulonephritis and pulmonary hemorrhage. Thrombotic microangiopathy (TMA), including atypical hemolytic uremic syndrome (HUS), has been described in association with anti-GBM disease in several cases.

Case: A 29-year-old Caucasian female was transferred from an outside hospital with the diagnosis of anti-GBM disease. She initially presented to the ED with a creatinine level of 22 and became anuric over the next few days. A kidney biopsy was performed, complicated by perinephric hematoma requiring embolization. She also developed a pulmonary hemorrhage after thoracentesis for a recurrent left pleural effusion. Kidney biopsy results were inconclusive. She was diagnosed given her clinical picture and elevated anti-GBM antibodies. Treatment was initiated with steroids, Cytoxan, plasmapheresis, and hemodialysis for AKI prior to transfer. Nephrology and rheumatology were consulted, and rituximab was started due to intolerance of Cytoxan's side effects. She was discharged and readmitted several days later with acute-on-chronic anemia and thrombocytopenia. Elevated reticulocytes and LDH, undetectable haptoglobin, and schistocytes on peripheral smear were concerning for hemolysis. Direct Coombs was negative. Hematology was consulted, who suspected thrombotic microangiopathy. Workup was negative for HIT, TTP, and DIC. Patient remained stable upon discontinuation of plasmapheresis and rituximab. The kidney biopsy was re-examined and findings were consistent with thrombotic microangiopathy. Repeat anti-GBM was negative. She was diagnosed with atypical HUS given decreased levels of C3 and C4 with negative genetic testing. She was started on anticomplement therapy with ravulizumab and is continuing ESRD management.

Discussion: This is a clinical presentation consistent with anti-GBM and atypical HUS, complicated by transfer of care and a suboptimal biopsy. Atypical HUS is a disease of unregulated activation of the alternative complement pathway, causing widespread microvascular thrombosis and resulting end organ damage. Published literature cites cases of patients who presented with both conditions or TMA misdiagnosed as anti-GBM disease, which is unlikely in our case given the initial elevated anti-GBM levels. Our case demonstrates the diagnosis of atypical HUS in the setting of anti-GBM disease utilizing critical evaluation of the patient's clinical presentation and laboratory evidence.

101) *HAFNIA ALVEI*: A LESS COMMON CAUSE OF UTI

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Introduction: *Hafnia* alvei is a commensal gram-negative bacteria commonly associated with meat and dairy products. It is an infrequent cause of gastrointestinal infections and less commonly described to cause urinary tract infections. There is no national data on the incidence and prevalence of infections attributed to *Hafnia* given its rarity, and it is more frequently assigned as a secondary pathogen. However, there are a few reported outbreaks attributed to *Hafnia* in the United States, Japan, Canada, and Russia within the last century. It is important to understand the antimicrobial susceptibility of *Hafnia* and direct treatment accordingly.

Case: An 83-year-old African American male with history of recurrent PE on apixaban, chronic indwelling Foley catheter, and insulin-dependent type 2 diabetes mellitus presented with altered mental status. He had a history of recurrent urinary tract infections that presented similarly. He was afebrile and hemodynamically stable. On exam, he had wheezes upon auscultation of his right lung and purulent urine was found in his foley. ED labs demonstrated leukocytosis with a WBC 15.5 K. Urinalysis was notable for >50 WBC, 3-5 RBCs, and occasional bacteria. Chest x-ray demonstrated a right middle lobe opacity, and a previous chest CT had noted a 2 cm nodule in his right upper lobe concerning for malignancy. He was admitted for empiric treatment of pneumonia and UTI with ceftriaxone, given previous urine culture sensitivities, and doxycycline, to cover for CAP. Urine culture grew >100,000 CFU/mL of *Hafnia alvei* with resistance to cephalosporins and sensitivity to TMP-SMX. Chest CT was also repeated which showed the same nodular opacity with adjacent hilar and mediastinal lymphadenopathy. Ceftriaxone was discontinued. He was transitioned to TMP-SMX and finished his course of doxycycline. He was discharged upon improvement of mental status to baseline with planned follow up with pulmonology.

Discussion: Although *H. alvei* is not a common cause of urinary tract infections, it was deemed unlikely to be a contaminant in our patient given significant growth on culture and his clinical picture. *H. alvei* has natural susceptibility to some cephalosporins, nitrofurantoin, quinolones, and TMP-SMX. It also has intermediate susceptibility to doxycycline. Although the strain found in our patient demonstrated resistance to cephalosporins, its susceptibility profile was otherwise consistent with the literature. Our case demonstrates the importance of culture-guided treatment used in tandem with published literature for infections of less commonly known pathogens.

102) NOT EVERY METASTASIS IS A CANCER EVEN IN CANCER PATIENTS

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Introduction: Nocardiosis is an uncommon but severe bacterial infection found primarily in immunocompromised patients. Recent chemotherapy or glucocorticoid therapy are additional risk factors for disseminated infection. Treatment duration ranges from 3-12months depending upon immune status and site of infection. It can be fatal if unrecognized in a timely manner.

Case Description: A 76Y female with history of cryptogenic cirrhosis and ovarian cancer, on chemotherapy, was diagnosed with brain metastasis for which she recently had gamma knife radiosurgery and was started on dexamethasone. She presented from home with progressive weakness and fatigue. At admission, she denied fevers, chills, night sweats but complained of dry cough and DOE which she attributed to deconditioning. She had a CT chest 7 days prior to admission which had revealed a small upper lobe lesion concerning for lung metastasis. On examination, she appeared dry, non-toxic with clear lung sounds. Her blood glucose was elevated in 400s and her creatinine was elevated. She was diagnosed with steroid induced diabetes and AKI secondary to osmotic diuresis and poor oral intake. She responded well to IV fluids and insulin. On day three of admission, she developed new coarse sounds at right upper chest but was asymptomatic otherwise. Her CXR revealed a large cavitary lesion with air-fluid levels on right upper lobe concerning for necrotizing pneumonia. Bronchoscopy with lung biopsy was performed. Pathology was negative for malignancy, but cultures grew Nocardia Otitidiscaviarum. Blood cultures remained negative and TTE was negative for valvular vegetations. MRI of brain was repeated to evaluate for disseminated infection revealing two new focal enhancing lesions concerning for Nocardia abscess. Lumbar puncture was considered but was ultimately deferred due to patient's decompensation requiring ICU transfer and intubation. ICU stay was further complicated by multi-organ failure. Pt was eventually extubated and after multiple meetings with palliative care team, she and her family opted for comfort care.

Discussion: Nocardial pulmonary infection can have little to no pulmonary symptoms at presentation. It should be considered in differentials of any lung lesions in immune-suppressed patients especially those who just have had chemotherapy or are on current steroid therapy. Brain imaging should be performed in all immunocompromised patients and in all patients with pulmonary nocardiosis. Early detection and treatment is crucial for improved outcomes.

103) DISTAL INTESTINAL OBSTRUCTION SYNDROME IN CF

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Introduction: Cystic fibrosis (CF) is a common genetic disease and while previously fatal in childhood, advancements in treatment have allowed for CF patients to live well into adulthood. Respiratory symptoms remain the main source of mortality in these patients, but gastrointestinal symptoms can greatly affect quality of life.

Case Description: A 30-year-old female with past medical history of CF with multiple hospitalizations for complications, chronic constipation, and pancreatic insufficiency presented to the emergency department with 24 hours of abdominal pain, chills, and nausea. She previously had multiple hospitalizations for CF abdominal complications involving pain concerning for distal intestinal obstruction syndrome (DIOS), meconium ileus equivalent and severe constipation. Physical exam was notable for distress, guarding on abdominal exam, and bilateral lower quadrant tenderness with positive McBurney's sign. Vital signs were within normal limits and labs demonstrated WBC count of 13.9. A CT scan of abdomen and pelvis was ordered to rule out appendicitis. Imaging demonstrated inflammatory changes involving the ascending colon compatible with ascending colitis and fecalization of the terminal ileum consistent with slow transit time through the small bowel, a sequelae of colitis. Findings were diagnosed as acute DIOS. No acute surgical intervention was indicated. Medical management with Ceftriaxone, metronidazole for infection, morphine for pain control and polyethylene glycol purge for terminal ileum obstruction were started. During hospitalization, the patient experienced an exacerbation of CF with a CXR positive for pulmonary infiltrates and was treated. She progressed from clear liquid to a general diet. Upon discharge, the patient's pain resolved.

Discussion: DIOS is a complication associated with CF and can commonly be misdiagnosed as appendicitis, mucocele, or constipation. The proposed pathogenesis for DIOS in CF involves the dysfunctional chloride channels leading to dehydration of the GI mucosa, creating the ideal environment for DIOS. Studies have shown that DIOS is more common in patients with severe pulmonary symptoms. However, factors such as age and pancreatic function may be confounders in this association. Due to the overlapping symptoms of DIOS, it can be difficult to diagnose and may recur as seen in this patient's multiple episodes of abdominal pain.

104) PECULIAR PURPURA: A CASE OF BACTRIM INDUCED IgA VASCULITIS

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Introduction: IgA vasculitis is a common systemic vasculitis of childhood, but can also affect adults. We will present a case of cutaneous IgA vasculitis without systemic involvement after a recent exposure to trimethoprim/sulfamethoxazole (Bactrim).

Case Vignette: A 67 year-old man with type 2 diabetes complicated by progressive diabetic foot ulcers with recent wound culture growing MSSA presented with a 1-day history of new bilateral lower extremity rash after taking three doses of newly prescribed Bactrim for his foot ulcer. Besides mild lightheadedness, he denied any oral lesions, hemoptysis, fevers/chills, arthralgias, or changes to urination. Physical exam showed bilateral lower extremities, dorsal feet, groin, lower back with palpable purpuric papules/plaques with dusky violaceous centers. Initial laboratory evaluation revealed elevated CRP (3.70), ESR (33), normal creatinine, and no RBCs or casts in the UA. Rheumatology and Dermatology were consulted for assistance. His Bactrim was stopped immediately on admission. Further evaluation revealed normal C3/4 levels, low urine protein/creatinine ratio, negative rheumatoid factor and CCP antibody, negative ANCA, and negative HCV/HBV testing. He had a TTE/TEE to rule-out septic emboli causing his rash, which was also negative for endocarditis. Dermatology biopsied a lesion, with histopathology consistent with leukocytoclastic vasculitis and stained positive for IgA vasculitis. He did not show any other organ involvement during his hospitalization. He did not obtain significant relief with topical steroids, so he began treatment with dapsone for cutaneous-limited IgA vasculitis, which was thought to be secondary to his recent Bactrim exposure.

Discussion: While 90% of IgA vasculitis occur in children, this disease can also affect adults. The underlying cause remains unclear, but a wide-range of exposures have been linked to this disease. Common manifestations include palpable purpura without thrombocytopenia and coagulopathy, arthralgias, abdominal pain, and renal injury. Adults are at higher risk of developing significant renal involvement. While this can be diagnosed clinically in children, given the lower adult incidence, biopsy of an involved organ site is very important in confirming the diagnosis. Treatment can often be limited to supportive care, but sometimes steroids can help shorten the duration of symptoms if they are severe. In refractory disease, colchicine and dapsone can be used.

105) EPSTEIN-BARR VIRUS AND HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS

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Background: Hemophagocytic lymphohistiocytosis (HLH) is a severe, rapidly progressive hyperinflammatory syndrome which can occur in the setting of an underlying genetic defect of lymphocyte cytotoxicity or secondary to an infection, malignancy or autoimmune disorder. Viral infections are a common trigger of HLH, especially Epstein-Barr Virus (EBV). Recognition of this rare syndrome can be challenging given the nonspecific symptoms and variable clinical presentation. Diagnosis can be guided by the HLH-2004 diagnostic criteria. Here, we present a case of EBV-induced HLH.

Case: A 43-year-old female with a history of chronic pancytopenia secondary to progressive myelofibrosis presented with neutropenic fever. She was ill-appearing upon admission and febrile up to 39.9°C. Physical exam was notable for jaundice and chronic splenomegaly. She was started on empiric broad-spectrum antibiotics and an exhaustive infectious work-up was completed. Diagnostic studies demonstrated baseline pancytopenia (WBC 0.4 K/uL, Hb 8 g/dL, PLT 11 K/uL), marked hyperferritinemia (57,323 ng/mL), hyperbilirubinemia, elevated transaminases and impaired coagulation with hypofibrinogenemia. Infectious evaluation was notable for an elevated EBV viral load by quantitative PCR (87,096 IU/mL). A bone marrow biopsy was completed and revealed features of hemophagocytosis. A diagnosis of HLH was rendered, acknowledging that interpretation of diagnostic criteria was limited given the chronic nature of her splenomegaly and cytopenias. She was initiated on HLH-directed therapy with dexamethasone and etoposide per the HLH-94 protocol. Rituximab was added given evidence of active EBV infection. She tolerated treatment well and had a rapid clinical response as evidenced by decreasing serum ferritin and EBV DNA along with improvement of her associated liver dysfunction and coagulation abnormalities.

Discussion: Prompt recognition and treatment with HLH-directed therapy is critical to increase successful outcomes of this rare, life-threatening syndrome. The goal of treatment is to suppress the severe immune dysregulation and should be tailored to treat HLH-initiating triggers as well.

106) NEW PRIMARY HON-HODGKIN LYMPHOMAS POST HODGKIN LYMPHOMA REMISSION

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Introduction: Hodgkin lymphoma (HL) is a neoplasm of the B-lymphocytes, a specific type of white blood cell. It is one of the most frequent lymphomas in western countries with an incidence of 3 in 100,000 people annually. HL constitutes about 10% of all lymphomas, with the remainder being non-hodgkin lymphomas (NHL). HL has two major subtypes; classic HL (cHL) constituting around 90% of all cases, and nodular lymphocyte predominant HL accounting for the remaining.

Case: The patient is a 74-year-old male, who presented to the ED in January 2020 with fatigue, fevers, weight loss, rash, and persistent cough. He has a past medical history of cHL diagnosed in 2013 and treated to remission with 6 cycles of ABVD (adriamycin/ doxorubicin, bleomycin, vinblastine, and dacarbazine) chemotherapy at the time, complicated by bleomycin pulmonary toxicity. Patient regularly followed up with annual CT scans and was in 5 years remission as of April 2019. Around that time, he started having intermittent fevers, chills, 20-25lbs weight loss, and fatigue. In fall 2019 he developed persistent non-productive cough leading to a decline in his oral intake. He developed a maculopapular rash on his thighs in September 2019, which progressed to chest, extremities, and face by January 2020, at which point he saw his oncologist at an outside hospital for his symptoms. He got a PET/CT scan which showed extensive bilateral supraclavicular, axillary and inguinal lymphadenopathy, concerning for malignancy, possible HL recurrence versus diffuse infection.

Upon admission in January 2020 at our hospital, he was started on empiric vancomycin and cefepime for suspected infection, and fluids for dehydration. Labs showed acute kidney injury possibly from dehydration, hyponatremia likely from poor oral intake, elevated lactate dehydrogenase and uric acid, and low platelets and hemoglobin. Oncology was consulted for likely HL recurrence. Chest X-ray, bacterial cultures, flu swab, and UA were all negative for infectious causes. Antibiotics were discontinued. CT chest showed lymphadenopathy similar to earlier scan, consistent with HL recurrence. No mass was seen in the mucosal space. A core inguinal lymph node biopsy was done, which incidentally showed peripheral T-cell lymphoma, a type of NHL. Patient's rash was now worse and progressed to new locations and dermatology was consulted. Left thigh and left cheek punch biopsies were done and respectively showed lymphocytic infiltrates with eosinophils consistent with hypersensitivity reaction, and EBV positive diffuse large B-cell lymphoma (DLBCL), another type of NHL. Through the course of admission, the patient worked with physical, occupational and nutrition therapy. After biopsy results, patient was transferred to oncology, and has started chemotherapy since.

Discussion: HL survivors treated with chemotherapy and/or radiation therapy have an increased risk of developing new primary malignancies. Per literature, solid tumors such as breast and lung cancer are the most common, followed by NHL and leukemia. NHL incidence at an average follow up of 6.7 years is increased by up to 3-35-fold compared to general population, with DLBCL being the most common. Also, HL and B-cell associated NHLs such as DLBCL as seen in this patient, both show B symptoms (fever, night sweats, weight loss). This makes it easy to mistake new primary NHLs for HL recurrence, which is important to note.

107) UNUSUAL PRESENTATION OF DIARRHEA SECONDARY TO ACUTE COLONIC PSEUDO-OBSTRUCTION

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Case: The patient is a 58-year-old male with a pertinent past medical history of stroke—7 and 4 years prior—with residual left-sided weakness, bipolar disorder, chronic back pain, chronic constipation, type-2 diabetes and hypertension. He presented to the emergency department with abdominal pain and clear watery diarrhea. On admission, he had electrolyte derangements; hypokalemia at 2.7 and hypomagnesemia at 1.5. He was suspected to have viral gastroenteritis at an outside hospital, after C. Diff testing and stool culture were negative. Upon transfer to our facility, he reported not receiving home opioids (oxycontin and oxycodone) at his group home. He was also diaphoretic and intermittently tachycardic with complaints of abdominal pain, raising concern for possible opioid withdrawal, contributing to diarrhea. He was placed on COWS (Clinical Opiate Withdrawal Scale) protocol and restarted on home opioids and had subsequent improvement of diarrhea. However, the claims of not receiving home medications were later stated to be questionable due to history of false allegations and patient's psychiatric history. Although he improved briefly, he had acute worsening of abdominal distension with new-onset emesis. KUB imaging and follow-up CT abdomen/pelvis showed dilated megacolon up to 19.2cm, compared to 8.5cm at outside facility 13 days prior, with possible sigmoid volvulus, raising concern for Ogilvie's syndrome. The patient initially refused all intervention, so his mental status was reassessed. He was deemed non-decisional after psychiatric evaluation. Opioids were immediately discontinued, and rectal tube decompression was started. He was briefly transferred to the ICU for neostigmine treatment. The surgical team was also consulted for evaluation. Subsequent imaging showed decreased colonic distension at 10.5cm and no evidence of sigmoid volvulus or mechanical obstruction. His symptoms also improved significantly, and he was discharged to his group home, off all narcotic pain medications.

Discussion: One of the major contributing factors for chronic constipation is decreased intestinal motility, resulting in intestinal fecal obstruction, or ileus. This can subsequently contribute to conditions such as Ogilvie's syndrome/ACPO (acute colonic pseudo-obstruction); a type of intestinal motility disorder caused by an unknown disruption of the autonomic innervation of the distal colon. This condition can result in obstipation, which is severe intractable constipation causing a fecal obstruction in the bowel. This can further lead to massive colonic dilatation upstream. Such severe blockage can sometimes cause increased secretions in the upstream colon, which along with stool matter can seep around the obstruction, mimicking diarrhea. This is sometimes referred to by the misnomer, overflow diarrhea. Therapeutic intervention for Ogilvie's syndrome is focused on decompression of the colon and includes supportive measures, pharmacologic therapy with neostigmine, colonoscopic decompression, and operative intervention if unresponsive to conservative therapy and/or colonic distension >12cm.

Conclusions: Our case serves as a reminder that ileus, obstipation and intestinal motility disorders such as Ogilvie's syndrome must be included in the differential for diarrhea, especially in the setting of prior chronic constipation.

108) RARE CASE OF H.PYLORI SUPPURATIVE GASTRITIS AND SPLENIC ARTERY PSEUDOANEURYSM

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Introduction: Ingestion of foreign body and an associated gastrointestinal abscess can be symptomatic or asymptomatic, life-threatening or benign depending on the shape, size and time of ingestion. The treatment also varies depending upon the above. Suppurative gastritis is a rare condition and early diagnosis is critical as it can be fatal if not treated in the appropriate time; however, we report a unique case of H.pylori suppurative gastritis and splenic pseudoaneurysm in a patient with a history of alcoholism and foreign body ingestion.

Case Presentation: 54-year-old male with a history of binge drinking presented to ED with epigastric pain. CT abdomen with contrast was done as part of workup showed inflammatory changes involving the pancreas, stomach, proximal splenic artery and finding suggestive of phlegmon-like deposition in gastric fundus and the pseudoaneurysm of splenic artery. CTA abdomen confirmed proximal splenic artery pseudoaneurysm measuring 6 to 7 mm. Following which Esophagogastroduodenoscopy showed a foreign body (tooth-pick) in descending duodenum, proximal fundus abscess that was internally drained with the removal of FB. Biopsy samples were sent for further evaluation. Antibiotic course with ciprofloxacin and metronidazole was initiated along with pantoprazole. Splenic artery pseudoaneurysm was managed with successful coil embolization and the patient was stabilized and discharged. Biopsy from EGD revealed active gastritis and identified focal Helicobacter pylori forms.

Discussion: Streptococcus is identified in more than 70% of suppurative gastritis cases. To our knowledge, this is first reported case of suppurative gastritis due to H. pylori infection. The mainstay treatment for suppurative gastritis is abscess drainage and antibiotic therapy. Data is limited to guide vaccination against encapsulated pathogens after splenic artery embolization and studies showed preserved splenic functions after embolization however no diagnostic test is available which can show preserved splenic functions.

109) HYDROXYCHLOROQUINE-INDUCED DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS

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Drug reaction with eosinophilia and systemic symptoms (DRESS) is a potentially fatal drug reaction with a mortality rate upwards of 10%. Hydroxychloroquine, an antimalarial medication commonly used to treat autoimmune conditions, is known as a relatively safe drug with a low incidence of adverse effects. We present the case of a 68-year-old woman who developed DRESS syndrome three weeks after initiating a hydroxychloroquine regimen for frontal fibrosing alopecia. Findings included a progressing morbilliform rash involving the face, classical timing of the rash, mildly elevated liver function tests, and serology positive for EBV reactivation. Dermatopathology from the representative lesion revealed superficial, midperivascular, and interstitial dermatitis with eosinophils, neutrophils, and focal epidermal spongiosis which confirmed the diagnosis of DRESS syndrome. Considering the recent publicity of hydroxychloroquine as a postulated treatment for Covid-19 (and subsequent increase in prescription rates), clinicians must be aware of DRESS syndrome as a rare but possible adverse effect of its use. We hope this increased awareness results in more efficient diagnoses of DRESS syndrome and the prevention of life-threatening outcomes.

110) THE EFFECTS OF FLUTAMIDE ON THE NEONATAL RAT HYPOTHALAMIC–PITUITARY–ADRENAL AND GONADAL AXES IN RESPONSE TO HYPOXIA

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Hypoxia is common with preterm birth and may lead to long-term effects on the adult hypothalamic–pituitary–adrenal (HPA) axis that are sexually dimorphic due to neonatal androgens. Although the adult rat adrenal does not express appreciable CYP17 activity, the neonatal rat adrenal may synthesize androgens that could be a critical local factor in the development of adrenal function. We evaluated these phenomena by pretreating the neonatal rats on postnatal days (PD) 1, 6, 13, 20 with flutamide (a nonsteroidal androgen receptor antagonist) at a standard or a high dose (10 mg/kg or 50 mg/kg) compared to vehicle control. One day later, neonatal rats were exposed to acute hypoxia and blood was sampled. We found that (a) in PD2 pups, flutamide augmented corticosterone responses in a sexually dimorphic pattern and without an increase in ACTH, (b) PD7 and PD14 pups had the smallest corticosterone response to hypoxia (c) PD21 pups had an adult-like corticosterone response to hypoxia that was sexually dimorphic, (d) flutamide attenuated ACTH responses in PD7 hypoxic pups, and (e) high-dose flutamide suppressed the HPA axis, FSH, and estradiol. Flutamide demonstrated mixed antagonist and agonist effects that changed during the first three weeks of neonatal life. We conclude that the use of flutamide in neonatal rats to evaluate androgen-induced programming of subsequent adult behavior is not optimal. However, our studies suggest neonatal androgens play a role in regulation of adrenal function that is sexually dimorphic and changes during early development.

111) A CASE OF THE VAPORS: RECOGNIZING VAPING-ASSOCIATED PULMONARY ILLNESS

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Introduction: As commercial availability of e-cigarettes has risen, vaping-associated pulmonary illness (VAPI) has emerged as a concerning cause of respiratory failure. Chemical exposure from e-cigarette products are the suspected cause of VAPI, particularly in those using low-quality vaporizers or products containing cannabinoids or artificial flavors. Here we report a case of VAPI in an adult who presented with subacute pulmonary, gastrointestinal, and constitutional symptoms.

Case: A 21 year old male with history of major depression presented with 2 weeks of progressive dyspnea and non-productive cough with associated fevers, malaise, myalgias, nausea, and scant hemoptysis. He reported 3 months of routinely using THC-containing e-cigarette products, including flavored products and those from alleged "black market" manufacturers. He denied tobacco use and had no other inhalational exposures. Vital signs concerning for tachycardia and 90% oxygen saturation on room air. On exam, heart had regular rhythm with no additional cardiac sounds, lungs were clear to auscultation bilaterally. Labs notable for WBC 16.1 with neutrophilic predominance, procalcitonin 0.58, AST 43, ALT 69. Chest x-ray showed airspace opacities in the mid-lung fields bilaterally. Empiric antibiotic therapy was initiated for presumed community-acquired pneumonia. CT chest revealed bilateral peribronchial ground-glass opacities and subpleural sparing concerning for inhalational injury. Bronchoalveolar lavage demonstrated positive Oil Red O staining with elevated lipid-laden macrophage index. Infectious workup was negative. He was started on corticosteroids and antibiotics were discontinued with rapid improvement in his symptoms.

Discussion: Many clinical, radiographic, laboratory, and pathologic findings common in VAPI are not specific to this spectrum of lung injury, making it difficult to differentiate from other causes of respiratory failure. Thus, prompt diagnosis and treatment of VAPI requires a high index of suspicion paired with a detailed history of e-cigarette use, and clinicians should investigate and treat other possible causes of illness as clinically indicated.

112) ANALYZING THE OUTREACH AND EFFECTIVENESS OF THE COMMUNITY-BASED PANTHER KIDNEY DISEASE SCREENING AND AWARENESS PROGRAM

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The Panther Kidney Disease Screening and Awareness Program (PKDSAP) was established in 2015 at the University of Pittsburgh, following the model set by at Harvard University. Through an earlier community-based needs assessment, it was found that Hispanic and South Asian populations, both of whom are high-risk for elevated blood pressure and Chronic Kidney Disease (CKD), were welcoming of our program to work with their community leaders to better identify these markers of chronic diseases. Specifically, PKDSAP worked with the Latino Family Center and the SV Temple to provide free health and CKD screenings. PKDSAP aims to provide free health and CKD screenings in conjunction with local community-based organizations. With the presence of an on-site primary care physician (PCP) who speaks the language and dialect of the community screened that day, patients are able to confidentially discuss screenings results and health concerns in a safe and trusting environment. This project examines the effectiveness and sustainability of this program in screening high-risk, underinsured populations. We also aim to determine the plausibility of expanding this program to medical institutions, such as Medical College of Wisconsin. Over three years, the program conducted 17 screenings and was able to see 79 different patients, 23 of whom returned annually. The vast majority were not insured and utilized the screening as the only time they obtained important health vitals and consulted with a physician. The organization's predominant focus, Hispanic and South Asian populations, are both genetically predisposed for high blood pressure and Type II Diabetes. This analysis indicates 40.5% (n=32) of our screened patients demonstrated high blood pressure (either controlled by medication or not yet diagnosed), and approximately 19% of patients (n=15) presented with glucosuria or proteinuria. Further, of the patients with abnormal urinalysis results, approximately 87% (n=13) of patients were at high-risk for, or had already developed CKD. Continued partnerships with the Latino Family Center and SV Temple have helped provide free health care to high-risk, underinsured populations in order to screen for preventable, yet common chronic diseases. We look forward to expanding this program in a local, sustainable manner at the medical education level.

113) ZIKA AND DENGUE VIRUS COINFECTION WITH SUBSEQUENT MYALGIC ENCEPHALOMYELITIS/CHRONIC FATIGUE SYNDROME: A CASE REPORT

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Background: Myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) is a poorly understood condition characterized by persistent fatigue lasting > 6 months, post-exertional malaise and orthostatic intolerance. ME/CFS has been reported after Epstein Barr, Chikungunya, West Nile, and Ebola virus infections. Zika and Dengue virus have known neurological sequelae. There are limited reports of ME/CSF after Dengue virus infection and no reports with Zika virus infection. Here we report a case of ME/CFS after Zika and Dengue virus coinfection.

Case Presentation: A 37-year-old woman developed a diffuse maculopapular rash, diarrhea, headache, myalgia and fatigue 5 days upon return from La Paz, Mexico. An initial workup showed leukopenia. Zika virus PCR from blood was positive. Dengue IgM and IgG were negative. Her acute symptoms resolved, however she continued to experience fatigue, post-exertional malaise and slowed cognition. Two months later, repeat testing showed a positive Zika IgM. Confirmatory plaque reduction neutralization assay (PRNT) showed a positive Zika IgM and Dengue serotype 1 IgM. A Dengue IgG was also positive. Workup for other causes of persistent symptoms was unremarkable. The patient was evaluated by the Chronic Fatigue Program at Stanford Hospital where she met criteria for Chronic Fatigue Syndrome.

Conclusion: This case report strengthens the notion of post-infectious ME/CFS and is the first to describe the syndrome after Zika and Dengue virus coinfection. Further studies are needed to determine the relationship between these neurotropic viruses and their relationship to ME/CFS.

114) COMPARISON OF METHODS FOR DETERMINING THE ANTIBIOTIC SUSCEPTIBILITY OF AEROCOCCUS SPECIES IN A CLINICAL SETTING

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Aerococci are Gram-positive cocci increasingly recognized as uropathogens in older individuals, causing urinary tract infection, urosepsis, and, more rarely, infective endocarditis. CLSI recently published breakpoints for *Aerococcus* spp. (M45, 3rd ed.); however, the gold standard method of antimicrobial susceptibility testing requires laked horse blood media that is not maintained in most clinical laboratories. Furthermore, this testing uses broth microdilution panels which are rarely performed in clinical laboratories compared to easier and cheaper alternatives. The purpose of this study was to evaluate and compare alternate methods of antimicrobial susceptibility testing for *Aerococcus* isolates. AST was performed on 134 clinical isolates using: E-tests on 3 different types of agar (chocolate agar, Brucella blood agar, and Mueller-Hinton agar with 5% sheep blood), Vitek 2 (AST-ST02), and BD Phoenix (GP SMIC-101). These results were compared to a reference broth microdilution using laked horse blood media on Sensititre STP6F. Consistent with prior studies, *Aerococcus* exhibited low MIC's to benzylpenicillin, meropenem, linezolid, and vancomycin. Variable resistance was seen to levofloxacin, ceftriaxone, and tetracycline. All alternate AST systems met acceptance criteria for essential and categorical agreement, very major error, and major error for susceptibility testing to benzylpenicillin, meropenem, vancomycin, and linezolid. Overall, these findings suggest that alternate AST methods are acceptable for select antibiotics in *Aerococcus* testing. The E-test on Mueller-Hinton agar plates with 5% sheep blood was found to agree most with broth microdilution and should be considered as an alternative method. The use of this AST system in clinical settings may permit more efficient treatment of *Aerococcus* infections.

115) A FUNCTIONAL, SUBCARINAL PARAGANGLIOMA ADHERENT TO THE LEFT ATRIAL WALL AND SUPPLIED BY LARGE BRANCHES OF CORONARY AND BRONCHIAL ARTERIES

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Mediastinal paragangliomas (PG) are neuroendocrine tumors that account for 0.3% of mediastinal tumors. Functional PGs, those that secrete catecholamines, are even more rare with only approximately 50 reported cases in the literature.

A 35-year-old male presented to the ED with chest pain, seizures, diaphoresis, and hypertension. ECG revealed a prolonged QT interval. A highly vascular 5.7cm subcarinal mass was identified on CTA and Dotatate images; labs showed elevated (>3x normal) levels of norepinephrine, normetanephrine, dopamine and chromogranin A. He was diagnosed with functional paraganglioma and started on terazosin 1mg BID to control catecholamine-related symptoms. The dosage was increased to 6mg BID over a month. He was also started on 12.5mg BID metoprolol 3 weeks after the ED visit to minimize intraoperative catecholamine surges. The subcarinal mass was supplied by a large branch of the right coronary artery (RCA) and bronchial arteries. Thus, a multi-stage resection was planned: (1) blood vessel embolization to protect the RCA and minimize intraoperative bleeding, (2) robotic-assisted thoracoscopy (RAT) for tumor resection. The RCA was successfully embolized. The bronchial artery was not embolized due to high-grade stenosis of the ostium. While mobilizing the tumor via RAT, the mass was found to be more firmly adhered to the pericardium than suspected based on imaging. To avoid injuring the left atrium, it was decided that an open sternotomy with cardiopulmonary bypass (CPB) would be safer. This was performed the next day, and the tumor and partial left atrial wall were successfully resected. Histological examination of the mass revealed a 5.9cm paraganglioma that stained positive for chromogranin, synaptophysin, and S100 and negative for CK AE1/3, confirming the diagnosis of paraganglioma. Patient made a full recovery, and his labs and symptoms returned to baseline by 4 months post-op.

This case illustrates that a hybrid approach involving (1) alpha and beta blockade, (2) pre-operative embolization of tumor blood supply, (3) RAT-based tumor mobilization, and (4) open resection with CPB can be a safe strategy in the treatment of functional mediastinal PGs that are adherent to cardiac structures and are supplied by major blood vessels. This approach can help minimize intraoperative bleeding and catecholamine surges while protecting important anatomic structures.

116) MITRAL VALVE VEGETATION AS AN ATYPICAL PRESENTATION OF INFILTRATING HEPATOCELLULAR CARCINOMA

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Introduction: Nonbacterial Thrombotic Endocarditis (NBTE) is an uncommon type of non-infectious endocarditis caused by the deposition of platelet thrombi on left-sided valves. The pathogenesis remains uncertain, but the condition is associated with hypercoagulable states, most commonly from primary gynecological or GI tract malignancies.

Case Description: A 71 year old male with a history of atrial fibrillation and remote intravenous drug use presented after a syncopal episode. Echocardiography was significant for a single mitral valve vegetation. Three separate sets of blood cultures had no bacterial growth. Labs showed progressively elevated liver enzymes when compared to his last liver function test four years ago. Hepatitis serology testing revealed a positive hepatitis C antibody. A quadruple phase CT Abdomen showed an infiltrative enhancing mass (14.7x14.0x18cm) occupying the majority of the right hepatic lobe and extending into segment four of the left hepatic lobe. There was associated washout on the delayed equilibrium phase which is consistent with a diagnosis of infiltrative hepatocellular carcinoma (HCC). The alpha fetoprotein level was 470 ng/mL, supporting the diagnosis. The patient elected to forego intervention (Yttrium-90 radioembolization) and was transitioned to hospice care.

Discussion: Most endocarditis episodes in chronic liver disease are bacterial due to factors associated with gut dysbiosis. Non-infectious endocarditis in HCC is typically attributed to pericardial metastasis; adult cases of NBTE in HCC are extremely rare. In general, a diagnosis of NBTE should always prompt an investigation of occult malignancy. This case also highlights the importance of follow-up for patients with high risk behaviors for viral hepatitis. The patient had abnormal liver enzymes four years prior but no further work-up. While infiltrative HCC is more commonly associated with hepatitis B, hepatitis C must be ruled out. This patient would have benefitted from serial abdominal imaging and hepatitis C therapy.

117) ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS (AGEP) AFTER BRENTUXIMAB WITH RECURRENCE AFTER RE-INTRODUCTION

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Case Description: A 56-year-old man with a history of folliculotropic mycosis fungoides presented with a two-week history of new onset rash six weeks after starting furosemide and brentuximab, the latter of which was started for treatment of refractory mycosis fungoides. Initially the rash comprised a small number of 1-2 mm non-pruritic, non-painful intact pustules distributed on the arms and back with few eroded areas. Over the next two weeks the rash became pruritic and spread the chest, trunk, back, and arms. Deep seated vesicles were found on both palms. The face and soles of the feet were spared. Laboratory evaluation showed leukocytosis with an elevated absolute eosinophil and absolute neutrophil count. Physical exam and laboratory findings were consistent with AGEP, likely due to furosemide or brentuximab. Both medications were stopped with a plan to restart brentuximab alone upon resolution of the rash. The patient was then re-challenged with brentuximab and developed the same pustular eruption within five days, after which brentuximab was permanently discontinued.

Discussion: AGEP should be suspected in patients who present with rapid development of dozens to hundreds of pin-sized non-follicular, sterile pustules on a background of edematous erythema. The eruption typically starts on the face or intertriginous areas and spreads to the trunk and limbs with a diffuse or patchy distribution. Common laboratory findings include fever, leukocytosis with neutrophilic predominance, and mild eosinophilia. Biopsy illustrates intra- and/or subcorneal spongiform pustules, eosinophils in the pustules or dermis, necrotic keratinocytes, and superficial, interstitial, and mid-dermal neutrophil rich infiltrate. In 90% of cases, AGEP is caused by medications through a type IV hypersensitivity reaction and discontinuation of the medication leads to resolution without sequelae. This report demonstrates a case of AGEP caused by brentuximab, an antineoplastic monoclonal antibody active against CD-30 positive cancer cells. There are few cases in the literature reporting association of AGEP with other antineoplastic monoclonal antibodies, including ranibizumab and pembrolizumab, but to our knowledge there are no prior cases of AGEP caused by brentuximab. Our report confirms a single observation of AGEP in mycosis fungoides under brentuximab therapy, suggesting this is a rare but potential adverse effect of brentuximab.

118) A CASE OF SEVERE KETOACIDOSIS SECONDARY TO THE KETOGENIC DIET

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The ketogenic diet has been in use for patients with epilepsy and other neurocognitive disorders for many years. More recently however, the ketogenic diet has become more popular in the realm of weight loss and obesity. It involves the idea of restricting carbohydrate intake and taking in more protein and fat content. This shifts the main source of energy from glucose to ketone bodies. In healthy non-pregnant individuals, levels of insulin accommodate for this change, preventing ketoacidosis. However, in the case of our patient, she was unable to compensate.

We present the case of a 29 y/o female who presented to the ER with back pain, nausea, and vomiting. She was found to have a pH of 6.8 with a bicarbonate of 4. Glucose was elevated in the 300s with a hemoglobin A1c of 5.3. She had appropriate insulin production and normal C-peptide. GAD-65 was negative. Patient had no prior diagnosis of diabetes, but had consumed alcohol, possibly in excess, two nights before admission. She was adequately resuscitated with IV fluids and bicarbonate but developed pulmonary edema during her hospital course. She was weaned off oxygen and instructed to eat a high carbohydrate diet upon discharge.

Ketoacidosis while on the ketogenic diet is very rare in healthy individuals. There have been case reports of ketoacidosis in diabetics and lactating women on the ketogenic diet, but this may be the first case of severe acidosis in an otherwise healthy patient employing this diet trend. While uncommon, these complications can arise. It is important that those who decide to make these dietary changes consult a healthcare professional to make sure they do so in a safe manner.

119) ACUTE CHOLESTASIS IN AN URGENT CARE EMPLOYEE: A UNIQUE CASE OF EBV-ASSOCIATED HEPATITIS

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Introduction: Liver is frequently affected by Epstein – Barr virus (EBV) infection, involvement is commonly subclinical and self-limited. However, acute cholestatic hepatitis is considered a rare but essential presentation. We present a case of abnormal liver enzymes and splenomegaly in an otherwise healthy 62-year-old patient.

Case Presentation: A healthy 62-year-old Caucasian female who works as a medical assistant at an Urgent Care presented with a 2-week history of fever and nonspecific back pain followed by painless jaundice of 2 days. Initial laboratory assessment revealed ALP 1231 U/L, ALT 170 U/L, AST of 158 U/L, and total bilirubin of 6 mg/dL. Abdominal imaging showed splenomegaly, finding suspicious for acute cholecystitis with cholelithiasis. MRI MRCP demonstrated no evidence of biliary pathology. EBV IgM antibodies were mildly elevated at 1.0 IA (ref <0.9IA) with a normal IgG. Assessment for viral hepatitis and autoimmune causes were unremarkable. Liver biopsy was pursued, given the possibility of seronegative PBC. Shortly after that, a quantitative EBV PCR titer returned at 5060 viral copies. Liver pathology revealed prominent portal and lobular hepatitis with some non-necrotizing granulomas and rare EBV positive cells. PBC was excluded as granulomas were mainly lobular not near the bile duct. The patient treated with supportive care, symptoms and abnormal LFTs resolved with 2 weeks.

Discussion: This case demonstrated a lack of symptoms specific to infectious mononucleosis in a patient with EBV induced cholestatic hepatitis. EBV should be considered as part of the differential diagnosis in a febrile patient with acute cholestatic hepatitis without evidence of biliary obstruction on imaging. EBV PCR can help identify the infection early in the course while IgM may be minimally elevated. A positive ANA or negative or borderline viral serology test in such cases may warrant liver biopsy to rule out other differential diagnoses.

120) MATURATIONAL CHARACTERISTICS OF THE HOST RESPONSE TO GBS INTESTINAL COLONIZATION

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Background: Group B Streptococcus (GBS) is a pathogen responsible for neonatal sepsis, meningitis, and death. Despite the use of intrapartum antibiotics, newborns remain susceptible to late-onset disease between 7 to 89 days. Adults rarely experience devastating disease which may be due to differences in host immunity, microbiota, or both. Prior research has indicated that immature neonatal innate immunity, including levels of cytokines and antimicrobial peptides, may influence the increased susceptibility to GBS infection.

Methods: (i) Cohorts of juvenile and adult mice were orally gavaged with GBS or control. After 18 hours, mice were euthanized and small intestine segments were dissected. Nucleic acid was processed for cDNA. Real Time PCR was performed with GAPDH as the house keeping gene. Statistical analysis was completed using Delta-Delta Ct analysis.

(ii) Human CaCO2 (epithelial colorectal adenocarcinoma) cell lines were grown and exposed to GBS inoculum or control. At fixed time points (30, 60, and 120 min), cells were lysed for nucleic acid and subsequent cDNA. Real Time PCR was performed with GAPDH as the housekeeping gene.

Results: Adult gavaged mice showed statistically significantly lower levels of IL-1β, IL-6, IL-10, and Muc2 as compared with juvenile infected mice. In human cell culture lines, IL-1β levels varied at 30, 60, and 120 minutes.

Conclusion: Differences in levels of pro-inflammatory cytokines (IL-1β, IL-6), anti-inflammatory cytokines (IL-10), and antimicrobial peptides (Muc2) were exhibited between juvenile and adult infected mice. This may suggest that adult mice rapidly clear the pathogen as compared to juvenile mice, and prevent colonization and invasive disease. Further studies are needed to better assess these differences in the context of GBS infection.

121) AN UNUSUAL CASE OF PANCREATITIS IN A PATIENT WITH CROHN DISEASE

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Introduction: Crohn disease (CD) is a chronic inflammatory condition that can develop anywhere along the digestive tract. The symptoms which arise are variable and often based off location and severity of inflammation. Pancreatic abnormalities in inflammatory bowel disease (IBD) patients are common and represent a heterogenous group of conditions, which includes acute pancreatitis (AP). AP occurs at increased rates for patients with IBD. Hepatopancreatic ampulla involvement of IBD is a rare, but recognized, etiology of AP in patients with CD.

Case: A 42-year-old female presents to Gastroenterology clinic for recurrent episodes of abdominal pain, nausea and vomiting. History is pertinent for ileocolonic CD diagnosed at age 37, with prior total abdominal colectomy and end ileostomy formation. Over the preceding 1.5 years, the patient had developed several episodes of severe abdominal pain and been admitted to the hospital multiple times. During admissions, lipase levels were elevated, and CT images were consistent with AP. The patient denied tobacco or alcohol use. Patient was on low dose naltrexone for management of CD, without symptoms of active disease. Lab work revealed normal calcium, triglycerides, ESR, CRP and IgG4 levels. Imaging was negative for cholelithiasis. Endoscopic evaluation was notable for extensive duodenitis, with inflammation affecting the hepatopancreatic ampulla. Pathology was consistent with active Crohn disease. The patient was treated with prednisone and infliximab therapy, with complete resolution of symptoms.

Discussion: Hepatopancreatic ampulla involvement occurs in 0.5-4% of patients with ileocolonic CD, and is associated with AP. It is hypothesized that inflammation may lead to obstruction of pancreatic duct outlet, leading to increased intraductal pressure within the main pancreatic duct. This case highlights the complexity in determining etiology of pancreatitis in patients with IBD, as patients most commonly will present with AP related to gallstones, alcohol, or medications, but are at risk for more rare etiologies.

122) IMPROVING RESIDENT TEACHING USING ACTIVE LEARNING TECHNIQUES

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Research has reported the most effective form of learning occurs when several learning styles are employed in an activity. The literature is limited on successful interventional strategies implemented in graduate medical education curriculum to improve residents' ability to teach medical students in clinical settings. The purpose of this study is to examine how presentations, role-play scenarios, and audience discussion improves medical resident clinical teaching skills and confidence in teaching ability.

A 35-minute didactic presentation for Internal Medicine and Family Medicine residents reviewed four critical clinical teaching elements: priming, direct observation, teaching in the presence of the patient, and providing feedback. Essential learning points were presented to the residents, then a five-minute role-playing scenario was performed utilizing these four elements followed by discussion of displayed teaching elements. Residents were given 3 surveys: immediately prior to the session, immediately following the session, and four weeks later. Ratings of the sessions and confidence levels of skills were measured using Likert scales.

Resident ratings of role-playing scenarios were significantly higher than PowerPoint presentations and discussion of scenarios. Resident recommendations of role-playing recommendations were significantly correlated to their ratings. Resident post-confidence ratings of teaching medical students, priming, teaching in patients' presence and providing feedback were rated at 4/5 on Likert scales with no significant decreases in retention scores after 4 weeks. Resident confidence increased and was significantly associated with ratings of role-playing scenarios and their scenario discussions as well as recommendations for using them with other residents. The presentation session was designed to focus on four main teaching points to ensure memorable learning and avoid information overload. This active learning style was rated highly by participants. Residents retained clinical teaching knowledge and utilized many of these techniques in the clinical rotations with medical students. The findings suggest the use of active learning styles for GME trainees to improve teaching skills among residents.

123) CARDIAC PERFORATION FROM PACEMAKER LEAD

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Introduction: Cardiac pacemakers are widely used for conduction disturbances and an effective treatment for many cardiac arrhythmias. Cardiac perforation caused by pacemaker is a rare and could be lethal complication. Cardiac perforation can affect any part of the heart that comes into contact with a pacemaker lead, but the right ventricular (RV) apex is the most common site due to a thin myocardial wall. Acute perforations occur within 24 hours of pacemaker insertion, while subacute presentations arise between 1 and 30 days, and chronic perforations more than 1 month after insertion. Here we present a case of subacute cardiac perforation from a pacemaker lead.

Case Presentation: A 53-year-old female presented with fatigue and bradycardia. EKG was significant for Mobitz type II second-degree heart block. Dual chamber pacemaker was inserted via the left axillary vein using an active fixation technique. The procedure was successful without any immediate complications. The patient presented after one week with dizziness/lightheadedness, worsening shortness of breath, and left sided pleuritic chest pain. Pacemaker interrogation showed an elevated RV threshold, decreased RV sensing, unchanged impedance and significant ventricular pacing percentage. Chest x-ray revealed dual lead left chest cardiac pacemaker with the leads in the right atrium (RA) and RV, with a new, small left pleural effusion. Echocardiogram confirmed pacer leads in the RA and RV. CT chest without contrast showed the right atrial pacer lead in appropriate position, with the right ventricular pacer lead appearing beyond the apical myocardium of the right heart. The patient was taken to the operating room and underwent a left anterior thoracotomy. The pacemaker lead was easily palpable through the RV apex. The distal screw portion of the lead was cut and the lead withdrawn, followed by repair of the RV apex. A new pacemaker was inserted transvenously and placed into the RV cavity. No complications were observed, and the patient was discharged home. She was doing well on follow up 3 months later.

Discussion: Pacemaker insertion is a commonly performed intervention for management of specific arrhythmias. Perforation occurrence rate is 0.3–1%. Patients can present with focal chest pain, shortness of breath from pericardial effusion or pleural effusion, syncope secondary to hypotension, ecchymosis, and fatigue; few patients can be asymptomatic. Lead perforation is an incidental finding on CT scan without adverse outcomes. Perforation rates are higher with active fixation leads compared to passive leads. With active fixation, care must be taken to avoid overextension of the helix. Lead extraction should be followed by new lead placement in a different location, preferably in the RV outflow tract or the intraventricular septum.

124) DRESS SYNDROME STROKE SYMPTOMS INDUCED BY VANCOMYCIN

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Background: Drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome is a drug-induced hypersensitivity reaction marked by skin eruptions, eosinophilia, lymphadenopathy, and internal organ involvement. The condition is rare and life-threatening with a mortality rate of up to 10%.1 Antiepileptic agents and antibiotics are causes of DRESS. We describe a case of DRESS with stroke symptoms resulting from vancomycin.

Case: A 78-year-old woman who had a bilateral total knee arthroplasty (TKA) came to the emergency department with concerns of falling. With concerns for infection, the left TKA component was explanted, and antibiotics were started. Due to diarrhea ceftriaxone was discontinued. Within 3 weeks she developed a morbilliform eruption, pruritic rash covering 80% of her body's surface—but sparing the palm and soles. Laboratory testing showed white blood cell count, 34,000/μL; absolute eosinophils, 5.85 K/uL; hemoglobin, 10.2 g/dL; creatinine 1.32 mg/dL; international normalized ratio, 1.4; troponin, 397 ng/dL; and lactate, 3.1 mmol/L. Urine smear tested positive for eosinophils. An electrocardiograph showed first-degree AV block. A skin biopsy was performed, showing parakeratosis, lymphocytic exocytosis and scattered dyskeratosis, and eosinophils. Antibiotics were discontinued and methylprednisolone was started. She developed left hemiparesis that was evaluated for ischemic stroke. An MRI revealed chronic multifocal multivascular distribution infarcts. Cerebral angiography did not demonstrate cerebral vasculitis. Her hemiparesis improved and she was started on an 8-week prednisone taper and the rash significantly improved.

Discussion: Vancomycin as a culprit for DRESS is rare, with about 32 cases identified.2 Antibiotics, especially vancomycin are associated with DRESS. 3 Neurologic manifestations with complications such as stroke appear to be even rarer among patients with DRESS, with only a handful of cases in the literature.4 Neurologic deficits should prompt further evaluation for acute stroke or vasculitis. In this case glucocorticoid treatment may have been beneficial in treating neurologic complications associated with DRESS.

125) PECULIAR HERALDING SYMPTOMS IN A PATIENT WITH E-CIGARETTE OR VAPING PRODUCT USE-ASSOCIATED LUNG INJURY

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Introduction: E-cigarette or vaping product use-associated lung injury (EVALI) is a novel medical condition largely afflicting individuals under the age of 35. The pathogenesis of EVALI is currently unclear. Perhaps for this reason, it may present in a wide variety of ways.

Case: A 31-year-old female with a history of daily vaping of tobacco and marijuana via homemade THC pods presented after three days of diarrhea, twenty-four hours of intractable vomiting, and a subjective fever. Vitals were significant for a temperature of 101oF, heart rate of 120bpm, respiratory rate of 18, and oxygen saturation of 94% on room air. Laboratory analysis revealed a left-shifted leukocytosis. CT abdomen/pelvis showed significant ground-glass opacities evident in the left lung base. The patient was admitted on empiric broad-spectrum antibiotics for pneumonia, but extensive infectious and rheumatologic workup was negative. On day two of admission, the patient developed hemoptysis, refractory hypoxia, and tachypnea. She was transferred to the ICU. CT chest demonstrated progression to diffuse basilar predominant ground-glass opacities with patchy areas of consolidation. The patient was treated with high-dose IV methylprednisolone and high-flow oxygen. Serial chest x-rays demonstrated improvement in the opacities six days after ICU transfer and her oxygen requirements decreased. The patient ultimately made a complete recovery.

Discussion: This patient experienced six days of gastrointestinal symptoms prior to developing rapid respiratory compromise. Although gastrointestinal symptoms are common in EVALI, it is uncommon for them to be the predominant presenting feature. Early concern for EVALI in our patient ultimately enabled the initiation of steroid treatment at the onset of respiratory decompensation. The patient's prolonged deterioration, despite the cessation of e-cigarettes, displays the need for close evaluation and management. A thorough social history and a high index of suspicion were essential in managing this patient whose clinical picture was initially unclear.

126) A CASE OF HODGKIN LYMPHOMA PRESENTING AS IMMUNE THROMBOCYTOPENIA

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Hodgkin lymphoma is a malignant B-cell neoplasm that comprises approximately 10% of all lymphomas. Patients often present with mediastinal and/or cervical lymphadenopathy while up to one-third present with constitutional symptoms, although there are several known more rare presentations, including immune-mediated cytopenias like Coombs-positive hemolytic anemia and immune thrombocytopenia (ITP).

We report a case of a 60-year-old male who presented with 10 days of oral mucosal bleeding and fatigue. On physical exam, he demonstrated wet purpura on his buccal mucosa, while laboratory studies were notable for severe thrombocytopenia refractory to platelet transfusions, a severe anemia, and a leukocytosis. His LDH was mildly elevated without any other laboratory evidence of hemolytic anemia. He was admitted for treatment of presumed ITP with high dose pulse dexamethasone and IVIG while undergoing concomitant workup for an underlying malignancy. A peripheral blood smear revealed a brisk reticulocytosis and bone marrow biopsy showed no evidence of a marrow infiltrative process. CT imaging revealed mediastinal and supraclavicular lymphadenopathy, and the patient underwent an ultrasound guided core needle biopsy of a supraclavicular lymph node. Pathology was consistent with Classic Hodgkin lymphoma. The patient developed recurrent thrombocytopenia despite receiving treatment for ITP and ultimately required re-admission for urgent initiation of ABVD. After receiving the first dose of chemotherapy, his platelet count recovered without further ITP-directed therapy, supporting the hypothesis that his presentation with ITP was driven by his underlying lymphoma.

Overall, this is a case of Hodgkin lymphoma masquerading as ITP, which is an autoimmune disorder characterized by antibody-mediated peripheral destruction of platelets. ITP can be primary or secondary to a variety of malignant and non-malignant disorders. Primary ITP is a diagnosis of exclusion, which was crucial to realize in this patient, given that Hodgkin lymphoma is a highly curable hematologic malignancy. It is estimated that between 0.2% and 1% of Hodgkin patients present with ITP, and the primary literature suggests that ITP is more commonly seen in patients in remission rather than at diagnosis.

127) THIS IS NOT THE NSTEMI YOU ARE LOOKING FOR

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Introduction: Peripheral arterial emboli are often cardiac in etiology but may also result from other sources including atherosclerosis and aneurysmal aorta. Thoracic aortic mural thrombus (TAMT) are a rare yet potentially devastating cause of distal organ and limb ischemia, with a reported incidence of 0.45% in the general population. Given difficulty in diagnosis and uncertainty with management, TAMT patients often suffer from high complication rates and mortality.

Case: A 42-year-old Caucasian female with a past medical history of smoking, hypertension, and severe peripheral vascular disease presented with acute shoulder and chest pain and dyspnea. ECG was notable for Q waves in the inferior leads but no ST changes. Troponins were elevated indicating NSTEMI. On transthoracic echocardiogram (TTE), there was mild to moderate left ventricular hypertrophy with an ejection fraction of 70-75% and no obvious wall motion abnormalities, a prominence of the posteromedial papillary muscle, and a mildly dilated left atria. Computed tomography angiography (CTA) revealed an extensive distal thoracic and mid-distal abdominal aortic eccentric mural thrombus without calcification or aneurysm. Cardiac catheterization was performed and showed myocardial bridging in the mid-left anterior descending artery and multiple areas of stenosis, including a 100% occlusion of the 3rd right posterolateral artery. Platelet counts had reached as high as 999x103/uL since September 2018. Family history is positive for moyamoya and ACTA2 mutation. The patient was started on lifelong anticoagulation and referred to hematology for further evaluation of thrombophilia to include possible testing for the ACTA2 mutation.

Discussion: TAMT is rarely encountered in clinical practice and is not diagnosed until after distal embolic events occur. Thrombi are believed to result from hypercoagulable states but the mechanism of direct mural aortic thrombus formation has not been elucidated in the literature. Management includes anticoagulation, thrombolysis, thromboaspiration, open thromboendarterectomy and endoluminal stenting. Recurrence often occurs and necessitates lifelong anticoagulation with a goal INR 2.5-3.5. Additional workup must include investigation into hypercoagulability such as screening for thrombophilias, malignancy and autoimmune disorders.

128) A PEEPHOLE PROCEDURE ON A RARE GASTRIC MUCOSAL WEB

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Background: Mucosal pre-pyloric antral web is a rare cause of gastric outlet obstruction that may result in failure to thrive and vomiting in pediatric patients. Treatment entails web resection and Heineke-Mikulicz pyloroplasty. The lesser-practiced laparoscopic approach involved is illustrated here to 1) provide an in-depth protocol and 2) further establish the approach as a viable alternative to open surgery. This report serves as a Phase 0: Proof of Principle study.

Case Presentation: A 3-month-old female with a prior history of gastroesophageal reflux and vomiting since birth presented to the emergency department with failure to thrive and vomiting after oral feeding with baby formula four to five times daily. Physical examination revealed a soft, non-distended, non-tender abdomen with normal active bowel sounds. No masses were palpated. No hepatosplenomegaly was detected. AP abdominal x-ray showed a nonobstructive bowel gas pattern. Upper gastrointestinal series and esophagogastroduodenoscopy (EGD) led to the visualization and diagnosis of gastric antral web. A nasojejunal tube was placed after failure to gain weight with nasogastrc feeding.

Treatment: First, the antral web was marked with gold probe cautery by a gastroenterologist. Subsequently, a laparoscope was inserted by a surgeon. After visualization and palpation of the pylorus, adhesions to the pylorus were dissected, an opening was created at the anterior pylorus, and the endoscopically-marked antral web was identified for delivery through the pylorotomy and resected. The procedure was finished with standard Heineke-Mikulicz pyloroplasty. A final EGD was performed to assess the antrum.

Discussion/Conclusion: Here, we detail the surgical procedure used to laparoscopically resect an antral web with endoscopic marking in an infant. The patient successfully fed orally without emesis following the procedure and gained weight. Through this report on technique, we aim to help shift treatment strategy toward a promising, less-invasive approach to antral web resection.

129) THE UNREMITTING CASE OF HYPOKALEMIA CAUSED BY OVERSNACKING

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Introduction: Geophagia, or the eating of soil, clay and other earth substances, is a cultural heritage and contemporary practice in the Andean Highlands, Haiti, and in various African countries. Postulated to be triggered by pica-like tendencies among nutrient-deficient populations, ingestion of earth substances such as clay promotes potassium binding within the GI tract, causing severe and potentially fatal hypokalemia.

Case Description: A 45 YO West African female with past medical history of hypertension and anemia presented with headaches, nausea, body aches, weakness and general malaise that had started the day prior. She had just finished a menstrual cycle that was heavy and prolonged and had no changes of bowel pattern. She thought a missed dose of atenolol could have triggered her symptoms, but after taking the medication found no alleviation. Her labs in the ED revealed a microcytic anemic with significant hypokalemia (2.2), but her iron studies, B12, folate, LDH and reticulocyte count were grossly unremarkable. She denied current iron supplementation, but detailed a history of clay eating, which started during her pregnancies 6 years prior as small mouthfuls and had been slowly progressing to the point of ingesting large handfuls. She relayed that her family brought the clay back from West Africa (Guinea), and described her habit as "comforting and cleansing" as well as "addictive". She reported that 2-3 days per week she consumed clay and water with no other nutritional intake, and had experienced anterior chest tightness and heart palpitations that were waxing and waning since her last pregnancy. Receiving potassium supplementation overnight as well as 1 unit of PRBCs, her repeat labs revealed little change in her potassium status. After further prompting, she disclosed that she had eaten some clay during her hospital stay, her pica theoretically triggered by her anemia. After complete cessation of clay intake, her serum potassium values slowly rebounded over 24 hours, and she was able to be discharged with strict instruction for potassium supplementation as well as to cease all clay eating.

Discussion: With resting membrane potential directly proportional to the ratio of intracellular to extracellular potassium concentration, hypokalemia produces neuromuscular symptoms of weakness and muscle cramping, and can be characteristically noted on ECG with ST segment depression and increased U wave amplitude. Cardiac consequences can be life threatening, such as prolongation of the QT interval promoting arrythmias. Repletion should be rapid in cases of severe or symptomatic hypokalemia.

130) HYPERSENSITIVITY PNEUMONITIS CAN BE A FAMILY AFFAIR

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Introduction: Hypersensitivity pneumonitis (HP) is a rare form of interstitial lung disease caused by the inhalation of various inciting agents. Vague and varying symptomology coupled with nonspecific radiographic features make its diagnosis a formidable challenge.

Case Description: A 23-YO non-smoking female with a history of asthma and chronic migraines presented with fever, rapidly progressive shortness of breath, and chest pain of 2 days duration. Her exposure history was positive for a contaminated water heater, and family history was positive for diagnosis of HP in her mother and brother in 2018, both of which were attributed to mycobacterium avium isolated from their water heater. Initially tachycardic and hypoxic requiring 2L oxygen, she was found to have a prominent leukocytosis of 29K, and her chest CT chest revealed diffuse bilateral ground glass opacities suggestive of atypical pneumonia. She was started on antibiotic therapy per guidelines for CAP. Her infectious disease work-up was negative including extended respiratory NAAT, pneumococcal and legionella antigen, atypical pneumonia NAAT and blood cultures, but her rapidly declining respiratory status at 48 hours warranted repeat chest CT revealing worsening multifocal pneumonia. Antibiotics were broadened to cefepime, linezolid and azithromycin and she was transferred to the ICU due to her increasing oxygen demand. Her urgent bronchoscopy with BAL did not reveal any organisms or eosinophilia, while emergent review of the medical records of both her mother and brother confirmed similar clinical and radiographic presentations during their episodes of HP. Subsequently, she underwent transbronchial lung biopsy, which revealed non-necrotizing granulomas, suggestive of HP. She was placed on a high-dose corticosteroid, which resulted in rapid improvement and she was able to be weaned off oxygen completely within 48 hours. She was discharged home on 6 weeks of PO steroids, and her family is in the process of replacing their water heater.

Discussion: Hypersensitivity pneumonitis (HP) is a complex syndrome of varying clinical presentation and natural history caused by the inhalation of organic or inorganic inciting agents. Its vague symptomology and nonspecific radiographic features make diagnosis particularly challenging, and it is commonly mistaken for pneumonia or other interstitial lung diseases. Detailing a potential exposure history and removing the offending agent are essential to the mitigation of this progressive disease that causes irreversible alveolar destruction and pulmonary parenchymal fibrosis.

131) ACUTE LEUKEMIA PRESENTING AS NECROTIZING OROPHARYNGITIS BY *SERRATIA MARCESCENS*

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Necrotizing soft tissue infections caused by *Serratia marcescens* have rarely been reported. Here we describe a case of life threatening Serratia oropharyngitis in a previously healthy man.

A 59- year old male with history of diet-controlled type 2 diabetes presented with 2 months history of fatigue, dyspnea, weight loss and 2 weeks of odynophagia, right sided facial swelling and fevers. Physical exam demonstrated trismus to 1 cm, necrotic-appearing tissue at retromolar trigone and right tonsillar swelling. Laboratory evaluation revealed pancytopenia and disseminated intravascular coagulation. Circulating myelocytes and tear drop cells were seen on blood smear. CT of the cervical soft tissues was remarkable for right peritonsillar abscess and gangrenous tonsillitis. The patient was transferred to the OR for débridement and placement of tracheostomy. Bone marrow biopsy was hypercellular with sheets of myeloid blasts (60%) consistent with acute myeloid leukemia (AML). Next generation sequencing identified a high risk mutation in TP53. Culture of débrided tonsillar tissue was positive for *Serratia marcescens* for which he received IV meropenem. However, he developed recurrent unexplained fever with elevated ferritin (30.400 ng/mL), liver function tests and low fibrinogen raising concern for possible secondary hemophagocytic lymphohistiocytosis (HLH) due to AML. Work up for a new source of infection was negative. Reassessment of the original bone marrow biopsy did not reveal hemophagocytosis but soluble IL-2 receptor alpha was elevated. A critical decision was made to start chemotherapy with decitabine-venetoclax for treatment of AML. With prolonged supportive care, he showed remarkable clinical improvement achieving complete healing of tonsilllar wound. No morphologic evidence of leukemia could be demonstrated on repeat biopsy and the patient is currently awaiting bone marrow transplant.

Serratia marcescens is a gram-negative bacillus of the Enterobacteriaceae group increasingly recognized as a nosocomial pathogen carrying multidrug resistance mechanisms. Necrotizing soft-tissue infections are rare and invasive oropharyngitis has previously only been described in children. Prompt recognition, débridement, targeted antibiotics and supportive intensive care is necessary when faced with Serratia in the immunocompromised host. Treating the underlying cause; in this case the AML, is the mainstay of infection control and wound healing.

132) EPTIFIBATIDE-INDUCED SUDDEN AND PROFOUND THROMBOCYTOPENIA DURING TREATMENT OF ACUTE MI

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Introduction: Epitifibatide is a glycoprotein IIb/IIIa inhibitor that has gained popularity for use in patients with acute coronary syndromes. Thrombocytopenia is associated with other GPIIb/IIIa inhibitors, such as abciximab, literature review shows rare reports of Epitifibatide induced severe thrombocytopenia.

Case Description: 69-year-old male with unremarkable past medical history presented with sudden onset of chest pressure. He was diagnosed with an anterior STEMI and given aspirin, heparin, Plavix and taken immediately for primary PCI.

A culprit (99%) mid-LAD lesion was stented and Eptifibatide bolus was given followed by maintenance dosing. Blood work done prior to PCI was 175 K/mcL. 2 hours after induction of Eptifibatide, platelet count was found to be 19 K/mcL. Thrombocytopenia was confirmed on repeat laboratory testing as well on peripheral smear. Eptifibatide induced thrombocytopenia was suspected, and infusion was immediately discontinued. Additional workup including PF-4 antibodies, d-dimer and fibrinogen were unremarkable. The following day the patient was found to have hematoma at the access site and platelets remained <20 K/mcL and patient was given 1 Unit of platelet transfusion. Over the next 96 hours there was a slow recovery in the platelet count, and he was able to be discharged on hospital day 4 with a platelet count above 100 K/mcL.

Conclusion: Here we present a case of eptifibatide-induced sudden and profound thrombocytopenia with groin hematoma after primary PCI for STEMI.

We suggest close monitoring of platelet count 2 hours post Eptifibatide use. We advise to consider any low platelet count as true until proven otherwise. Eptifibatide should be discontinued immediately and the mainstay of treatment is supportive. Sheath pulls after catheterization should be postponed in the setting of severe thrombocytopenia due to the risk of bleeding.

133) AN INTERESTING CASE OF A WOMAN WITH HYPOXEMIA WHO CLINICALLY DETERIORATES AFTER INTUBATION

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Case: A 38-year-old woman with a history of anxiety presented to an outside ER for evaluation of progressive abdominal girth, and bilateral LE swelling. Pulse rate was 85/min, and BP was 153/81 mm Hg on LA. Pulse ox was 74% on LA, however, she did not initially complain of shortness of breath. Her exam was significant for clubbing of her fingers. A CT PE protocol of the chest revealed no evidence of PE, but was remarkable for a VSD with cardiomegaly, mild vascular congestion and pericardial effusion. The patient was kept on Oxymask, but was later intubated due to continued severe hypoxemia. Despite intubation there was no significant improvement in oxygenation. On biochemical analyses Hb was 24.1 g/dL. The patient's EKG revealed sinus tachycardia with fusion complexes, possible LA enlargement and RV hypertrophy. At this point there was concern for a primary cardiac condition, and she was transferred to a tertiary MICU. Upon arrival, her saturations were in the 40's and she was severely hypotensive. The adult congenital heart disease service was consulted and she was started on phenylephrine and NO with immediate improvement in saturations. TTE revealed Tetralogy of Fallot with an anteriorly deviated infundibulum septum, a large VSD with bidirectional shunting, and severe pulmonary valvular stenosis. The RV cavity was mildly dilated, with mild ventricular hypertrophy and diminished systolic function. She was treated for heart failure and soon extubated. Her subsequent clinical course was complicated by a PCA stroke, and a large neck mass near the carotid bifurcation, found to be a paraganglioma. She eventually underwent hemodynamic catheterization, and complete surgical repair of her congenital heart defect with normalization of her oxygen saturations.

Discussion: Adults living with CHD represent a growing and unique population. There are now more adults living with CHD than children. Care for these patients is both challenging for their cardiologists, but also other medical specialists as they frequently have extracardiac manifestations of CHD. This case demonstrates the importance of recognizing an adult congenital heart disease (ACHD) patient, knowing that these patients may not have the expected responses to seemingly ordinary medical interventions or diagnostic testing, and being familiar with available resources to assist in these sometimes extremely complex patients. ACHD patients may have unequal pulse or BP measurements in their upper extremities. They may have baseline hypoxemia that is unresponsive to supplemental oxygen. ACHD providers have expertise in managing these patients' unique physiology and hemodynamics. Although not present at every medical center, being aware of how to access the closest ACHD program can be extremely helpful in managing these complex patients.

134) PING-PONG THROMBUS: A FASCINATING CASE OF PULMONARY EMBOLISM

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Introduction: Intracardiac thrombi are found in about 10% of cases of pulmonary thromboembolism (PTE). The incidence of right atrial (RA) thrombi is not well defined. Of patients with RA thrombi, 36% had pulmonary emboli (PE), and 6.5% of all patients with PTE confirmed at autopsy had RA thrombi. Here we present a case of RA thrombus resulting in pulmonary embolism.

Case Description: A 65-year-old male with a history of coronary artery disease, and hypertension presented with a two-month history of dyspnea. He also had night-sweats, and 50 lbs weight loss. The patient was tachypneic and hypoxic, but had stable blood pressure and heart rate. Labs revealed troponin of 0.08, and an increasing NT-Pro-BNP at 41,770 pg/mL. V/Q lung Scan demonstrated high probability for PE. Lower extremity duplex Ultrasound revealed bilateral DVTs. A STAT 2-D Echocardiogram showed massive thrombus, greater than 3 cm "ping-ponging" between the RA and the Right Ventricle (RV).

Decision-Making: The patient received systemic tPA emergently in the ICU. Post tPA, a repeat 2-D Echocardiogram showed no interval change. The patient had no symptomatic improvement. Subsequently, Percutaneous Thrombectomy was offered, unfortunately, the patient suddenly coded and died on the way to the procedure.

Conclusion: Many patients with atrial thrombi have no underlying atrial infarctions but have severe ventricular dysfunctions, history of myocardial infarctions, or congestive heart failure. Atrial thrombi frequently occur in the right atrial appendage, and/or within the body of the atrium. Treatment options include thrombolysis, surgery, catheter-based interventions. This oscillating mass on echocardiography is concerning for a chronically well-organized thrombi given the lack of interval change post tPA.

135) A CASE OF COBALT INDUCED CARDIOMYOPATHY

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Introduction: Cobalt induced cardiomyopathy can cause a rapid but reversible depression in left ventricular(LV) systolic function. About 1/3rd of patients with reduced LV ejection fraction(LVEF) are diagnosed with non-ischemic cardiomyopathy(NICM), with some causes such as cobalt toxicity, being reversible.

Case: A 43 year old male with a remote history of NICM and right hip arthroplasty presents with dyspnea on exertion and weight gain. On admission labs were notable for elevated troponin(0.15 ng/ml), elevated pro BNP, elevated lactate(3.2 mmol/L), as well as cool lower extremities. Patient underwent right and left heart catheterization showing pulmonary artery pressure of 33/28 (mean 29) mmHg, wedge pressure of 24 mmHg and Fick Cardiac Output of 4.6 liters/minute. Transthoracic echocardiogram showed a normal sized left ventricle with an LVEF of 20% and moderate pericardial effusion. Patient was diuresed with Lasix and placed on Milrinone with improvement in symptoms. Cardiac MRI revealed diffuse late gadolinium enhancement suggestive of infiltrative heart disease, however endomyocardial biopsies were not suggestive of infiltrative disease. Cobalt/chromium levels were found to be elevated, secondary to his hip prostheses. Patient was discharged home with medical management and plan for elective hip prostheses revision, which occurred 6 months later. Serum Cobalt levels decreased from 156.2 ug/L prior to revision to 64.7 ug/L after revision(normal <5 ug/L). Repeat TTE 1 month after prostheses revision showed LVEF of 30%.

Discussion: Cobalt toxicity is a potential cause of NICM. Diagnosis requires biventricular heart failure seen with elevated cobalt levels, that subsequently improves with normalization of cobalt levels in the blood. Associated findings include polycythemia, pericardial effusion, and goiter. In the patient above LVEF recovered partially after prostheses revision. In a patient presenting with NICM, a thorough workup is necessary to investigate reversible causes that can lead to significant LV recovery.

136) PULMONARY EMBOLISM AS A KEY DIFFERENTIAL IN SICKLE CELL DISEASE PATIENTS PRESENTING WITH CHEST PAIN

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Pulmonary embolism (PE) often presents nonspecifically as chest pain, tachypnea and tachycardia, which are symptoms that lead to broad differentials, as such it can be mistaken for another pulmonary condition, such as acute chest syndrome (ACS) in patients with Sickle Cell Disease (SCD), leading to misdiagnosis.

A 32-year-old African American female with past history of sickle cell-beta thalassemia, stroke, deep venous thrombosis and bilateral hip avascular necrosis presented with one week of dyspnea, non-radiating, left-sided chest and shoulder pain. She also had been coughing with intermittently blood tinged phlegm for two weeks. On physical exam, she was afebrile and without tachypnea. No swelling or edema was observed in the lower extremities. Abnormal blood chemistries included hemoglobin of 8.8 (baseline: 10), reticulocyte of 7% (baseline: 3%), elevated total bilirubin, alkaline phosphate and lactic acid. Chest X-ray showed consolidation and left pleural effusion. She was diagnosed with pneumonia and early ACS by clinical correlation and image findings, and started on Azithromycin for pneumonia, and oxygen, fentanyl and Lidoderm for ACS. On hospital day two, due to lack of improvement in pain despite given appropriate pain management regimen, a CT-angiogram was ordered to rule out a potential pulmonary embolism. The image revealed a segmental lingular filling defect consistent with pulmonary embolus leading into a pulmonary infarct. She was immediately initiated on therapeutic anticoagulation with Xarelto, where she had dramatic improvement and subsequently discharged.

Stasis of blood flow, endothelial injury and hypercoagulability are three factors leading to deep venous thrombosis and subsequent PE. In SCD patient, hemolysis releases prothrombotic factors, creating a hypercoagulable state and increasing risk of thromboembolism. While other vaso-occlusive complications such as ACS, stroke, and osteonecrosis has been well studied, PE in SCD has often been overlooked. For one reason, PE often presents similarly to ACS, and thus can be mistaken as such. Some case reports also described incidents where PE and ACS occur at the same time in sickle cell patients, adding another layer of diagnostic complexity. Treatment for PE is different from ACS. Therefore, any SCD patient with chest pain that is unresponsive to standard ACS therapy should be screened for PE.

137) DRUG-MEDIATED BULLOUS ERUPTIONS: STEVENS-JOHNSON SYNDROME VERSUS ERYTHEMA MULTIFORME MAJOR

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Stevens-johnson syndrome (SJS) is a life-threatening dermatosis, usually caused by drug reactions. It is characterized by painful blistering of skin and mucous membranes and epithelial sloughing. However, another drug-induced dermatosis, Erythema multiforme major (EMM), can present similarly with blistering. Albeit having very similar clinical presentations, SJS and EMM carry drastically different mortality rate and are maganged differently.

A 82-year-old female presented to the emergency department with worsening pruritic, non-painful rash and painful oral ulcers, along with significant lip swelling, in the setting of recent sulfamethoxazole/trimethoprim use for UTI. She was subsequently admitted to the medicine floor for suspected SJS. On physical examination, the patient was afebrile and well-appearing. Her rash was diffusely erythematous and coalescing, involving her back, bilateral buttocks, upper central chest and proximal upper extremities. Lesions form thin smooth plaques with focal areas of dusky, purpuric patches and 1-2mm hemorrhagic crusts within. No desquamation of skin was noted. Oral cavity examination showed grade III severe mucositis. Punch biopsies from the shoulder lesions showed interface dermatitis with partial thickness necrosis, concerning for early SJS vs EMM. Due to suspicion for early non-classic SJS, the patient was immediately treated with one 50mg etanercept injection in effort to abort SJS. Following the therapy, patient's rash and mucositis significantly improved, and she was discharged from the floor to outpatient follow up. Her skin and oral mucosa completely re-epithelized nine days post-discharge.

Here we report a case of non-classic early SJS, with overlapping EMM features in an elderly female who presented with rash and oral mucositis. According to the 1993 classification guidelines, SJS typically presents with widespread macules or flat atypical targets, usually starting in the truncal area and spreads down to the extremities, which is consitstent with this patient's presentation, however, SJS often has associated prodromes such as fever and flu-like syndrome along with extremely painful skin sloughing, which were both absent in this patient. In contrast EMM often has an element of non-painful rash. Compare to the self-resolving EMM, SJS is disfiguring and acutely life-threatening. This case highlighted the nuance and atypical presentation of an early SJS and the benefit of early treatment in terms of improved clinical outcome.

138) AUSTRIAN SYNDROME – A CASE OF A RARE CLINICAL TRIAD

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Introduction: *Streptococcus pneumoniae* is a common cause of bacteremia in both immunocompetent and immunocompromised individuals. Although exceedingly rare in the antibiotic era, if the infection disseminates it can result in the clinical triad of pneumococcal endocarditis, meningitis, and pneumonia – also known as Austrian Syndrome. We present a case of this rare and potentially life-threatening syndrome.

Case Description: A 58-year-old male with chronic hepatitis C, alcohol abuse, and tobacco abuse presented to the emergency department (ED) in respiratory distress. He was in his usual state of health until 2 weeks prior when he developed fever, chills, nausea, vomiting, and diarrhea. He became short of breath and presented to the ED, where he was found to be in septic shock with a blood pressure of 85/49 and an O2 saturation of 82% on room air. He was treated with broad-spectrum antibiotics, fluids, vasopressors, and BiPAP. Chest imaging showed multifocal left-sided pneumonia. His respiratory failure progressed and he was ultimately intubated. Blood and sputum cultures grew *S. pneumoniae* sensitive to ceftriaxone. A transesophageal echocardiogram demonstrated aortic valve endocarditis and a lumbar puncture was positive for *S. pneumoniae* antigen. The diagnosis of Austrian Syndrome was made, and he was treated with 2 grams of ceftriaxone every 12 hours. His condition improved and was extubated on post-admission day #8. He was transferred to a skilled nursing facility where he completed a 4-week course of ceftriaxone.

Discussion: *S. pneumoniae* is a common human pathogen and the most commonly isolated organism in meningitis, otitis media, pneumonia, and sinusitis. Although the incidence of pneumococcal disease has declined following introduction of the 13-valent pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23), an increase in disease caused by pneumococcal serotypes not included in the vaccines has been observed. When patient presentation is delayed or occurs in a compromised host, pneumococcal disease can disseminate and cause Austrian Syndrome. Prompt diagnosis can prevent progression to fulminant multisystem involvement. This case is presented to educate clinicians regarding a disease now uncommon but still present following the introduction of a pneumococcal vaccine.

139) EVIDENCE-BASED DECISION MAKING: MARATHON COUNTY PRE-TRIAL PROJECT

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Abstract: Marathon County is 1 of 6 Wisconsin counties chosen through an application process to partner with the Wisconsin Department of Justice and National Institute of Corrections (NIC) in the Evidence-Based Decision Making in State and Local Criminal Justice Systems Initiative (EBDM). The Marathon County EBDM team shares in the vision for criminal justice system reform in North Central Wisconsin. By scoring individuals within the justice system, assessments can be made about the amount of resources, services, and individual support needed to effectively reduce recidivism. Recidivism is the tendency of a convicted criminal to reoffend. The pre-trial period is the time frame of the initial arrest to before the case disposition, and this is when key decisions are made about releasing, citing, detaining, charging, and bail. Even short periods of incarceration significantly impact health.

140) UNILATERAL FACIAL PARESTHESIA AS INDICATION OF MULTIPLE MYELOMA PROGRESSION: A CASE REPORT

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Multiple myeloma (MM) is a bone malignancy that commonly affects older individuals and is characterized by the proliferation of clonal plasma cells in the bone marrow. Classically, patients have hypercalcemia, renal insufficiency, anemia, and bone pain. In practice, patients most likely present with fatigue, bone pain, infections, and secondary amyloidosis. At diagnosis, 35% of patients have oral manifestations, with swelling as the most common symptom. Of these, 27% initially have paresthesias, although rarely as the sole indication of disease.

We present a 63-year-old man with a history of MM in complete remission for 4 years presenting with paresthesias along the distribution of the left cranial nerve (CN) V3 for 2 months that began 1 week following a dental procedure of the left jaw requiring bone manipulation. Given timing and pattern of symptoms, leading diagnoses included injury to CN V3 during his earlier procedure and trigeminal neuralgia. An MRI was ordered and recommended he follow-up with his oral surgeon, although patient left for international travel. 1 month later, patient presented to his oral surgeon. X-ray revealed a circular lytic lesion of his left mandible. MRI imaging showed findings consistent with an enhancing neoplastic lesion of the mandible. He underwent radiation treatment to his left mandible. Later PET scan revealed hypermetabolic lytic lesions of the left mandible, left clavicle, left femur, and left ulna. At that time, he was started on kyprolis, revlimid, and dexamethasone (KRD).

This case underscores the importance of considering a relapse of MM in the setting of facial paresthesias consistent with a single CN V branch distribution. These patients should undergo MRI even in the absence of pain due to risk of possible progression of disease.

141) DIGITAL CARE IN MENTAL HEALTH AT FROEDTERT & MEDICAL COLLEGE OF WISCONSIN

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Abstract: Anxiety, depression and stress-related disorders are prevalent mental health conditions, yet treatment for these conditions are often times difficult to access. Digital tools, such as those that provide internet-based cognitive behavioral therapy (iCBT) may help clinicians support the mental health needs of patients, either as a bridge to therapy or as a form of therapy.

At a midwestern academic health system, a digital mental health program (SilverCloud) was integrated into workflow and electronic systems and made available to primary care clinicians. Our study sought to analyze patient demographics, uptake, usage, and engagement patterns of iCBT users and prescribers within our academic health network.

Over the first two years of operation, 138 clinicians (% eligible) prescribed SilverCloud to 2,228 unique patients and 1,117 (48.9%) created an account. Patients who used SilverCloud were mostly female, non-minority users lacking any medical comorbidities between the ages of 18 and 38 years old. The average time patients spent using the program was 114.6 minutes.

Future steps include performing a cost analysis to understand whether models utilizing iCBT are net cost-saving for health systems.

142) TRIGEMINAL TROPHIC SYNDROME AFTER CEREBROVASCULAR ACCIDENT

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Introduction: Trigeminal Trophic Syndrome (TTS) is a very rare disease associated with injury to the trigeminal nerve mostly commonly from trigeminal nerve ablation procedures and ischemic damage involving the posterior encephalic vascular territory. TTS classically presents as a clinical triad of trigeminal anesthesia, facial paresthesia and crescent-shaped ulceration of the lateral nasal ala exacerbated by self-manipulation.

Case Description: A 65-year-old male presented to the ED for evaluation of multiple non healing ulcers on the right side of the face and failure to thrive following right MCA stroke 2 years ago. Based on chart review, TTS was diagnosed 6-7 months after stroke on presentation to dermatology with multiple self-inflicted ulcerative face lesions with complete destruction of the right ala. The patient was informed that medical therapy yielded poor results, and no medical therapies were pursued. During the disease course, reconstruction and prosthetic options were suggested but ultimately declined. The patient was treated multiple times with antibiotics for facial cellulitis. The facial misconfiguration progressed from complete erosion localized to the right ala at the time to diagnosis to a 2-inch in diameter right facial erythema adjoining the nostril area to a severe right-sided 4-inch by 4-inch open facial ulceration down to the teeth that was constantly draining bloody-white fluid. 2 years after the initial diagnosis of TTS, the patient presented to our ED with failure to thrive due to complications of other medical problems and refusal of medical interventions. Given the complicated course of the disease, palliative care was consulted. The patient was transitioned to hospice and died shortly after.

Discussion: The low prevalence of TTS and lack of RCTs studying treatments has resulted in the lack of a proven standard treatment protocol. Ulceration is believed to be self-inflicted. Prevention of self-manipulation is the focus of interventions such as patient education, medications like gabapentin and carbamazepine, installation of a protector, transcutaneous nerve stimulation, and surgical repair. TTS management should involve a coordinated multi-disciplinary approach from dermatology, neurology, psychiatry, and surgery. A better understanding of the available management options and their limitations as well as an understanding of the importance of patient education will hopefully result in better outcomes for TTS patients.

143) COVID19: ACUTE RENAL FAILURE WITH MULTIORGAN FAILURE

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Introduction: While COVID19 is highly associated with Acute Respiratory Distress Syndrome (ARDS) and Acute Renal Failure (ARF), we present a case with multiorgan failure.

Case Description: A 58-year-old African American male with a history of hypertension and uncontrolled type-2 diabetes with normal baseline renal functions presented with generalized weakness and decreased urine output (25 ml in 24 hours). He had borderline hypotension, tachycardia, and tachypnea. He was tested positive for COVID19 and labs revealed a lactate of 13.3, elevated anion gap metabolic acidosis with a pH of 7.04, severe electrolyte disturbances with creatinine of 10.80 mg/ dL (baseline creatinine is 1 mg/ dL), BUN 122 mg/ dL, and hyperglycemia. Patient progressed from mild proteinuria to severe proteinuria with protein/creatinine ratio of 4665 and microalbumin/creatinine ration of 659.5 within two days of admission. Patient also had moderate transaminitis, moderately elevated lipase, and several occurrences of anemia requiring numerous blood transfusions.

Decision-Making: The patient was admitted to the ICU, intubated for ARDS and underwent Continuous Veno-Venous Hemofiltration (CVVH) with severe complications of thrombosis of the CVVH circuit requiring heparin. The patient received broad spectrum antibiotics, steroids, and convalescent plasma but was not a candidate for Tocilizumab or Remdesivir.

Conclusion: This patient had multiorgan failure requiring vasopressors, broad spectrum antibiotics, without any bacterial growth on blood, urine, or sputum cultures. Many indolent viruses were tested for and were negative. ARF could be secondary to acute tubular necrosis from volume depletion in the setting of severe pre-renal azotemia, along with DKA and contribution from direct thrombotic effect of COVID19. The patient persistently exhibited anemia despite several transfusions, which led us to believe he may have COVID19-related aplasia. There are still many unknowns of COVID19.

144) REDESIGNING TRANSITION TO CLERKSHIP CURRICULUM

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Background: Transitioning from the structured environment of the preclinical years to the clinical setting is challenging and stressful for students. We did not find any existing guidance on what the goals and objectives of such a Transitioning to Clerkship (TTC) course should be. We followed Kern's 6 step approach to curriculum design to revamp our TTC course.

Methods: Following a general needs assessment, a targeted needs assessment was conducted by reviewing TTC course evaluations over three years (N=300), survey of third year medical students (N=110, response rate 38%) and survey of clerkship directors (N=6, response rate 100%). Thematic analysis was conducted to analyze student comments on evaluations and surveys.

Results: The following topics were identified by majority of students and course directors for inclusion in our TTC curriculum (percentage of student respondents who "definitely" recommend a session for inclusion is provided in parenthesis):

- Paging etiquette (66%), Effective oral presentations (83%), Writing patient care notes (73%), Electronic medical record use (98%), Interpreting common diagnostic tests (56%), Managing common electrolyte abnormalities (76%)
- Clerkship specific sessions and 4th year student panel covering the following: Role and responsibilities of third year students (85%), Structure of inpatient ward teams (76%), Studying for shelf exams (51%), Call schedules and shift terminology-on call, night float, short call, long call (63%), Tips on determining whether a specialty is going to be a good fit while rotating through it (73%), Asking for letters of recommendation (71%), Scrubbing in for procedures (surgery only) (76%)

Conclusion: Our comprehensive needs assessment provides guidance on topics considered important for inclusion in a TTC course by both learners and clerkship directors. Topics considered important by at least half the clerkship directors but not learners included wellness, introduction to interdisciplinary teams, outline of testing and evaluation and guidance on using social media.

Learners at our institution have a strong preference for TTC type courses to cover topics that they can immediately apply to patient care as third year students.

145) DOES DAY OF THE WEEK MATTER? AN ANALYSIS OF HOSPITALIST SWITCH DAY FROM TUESDAY TO THURSDAY

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Background: Hospitalists generally work one week on, one week off. Different hospitalists group switch on different days of the week. It is unclear if choosing a particular day of the week as the switch day has an impact on length of stay. There is some concern that switching service later in the week, such as Thursday or Friday, leads to a longer length of stay. It is proposed that attendings are less likely to discharge patients on the day they switch. We present the impact of modifying the attending switch day from Tuesday to Thursday on length of stay on general internal medicine teams.

Methods: We have fourteen general internal medicine ward teams at our institution. We compared the length of stay for patients cared for by our hospitalist faculty six months before and after we switched the attending switch day from Tuesday to Thursday. We present an adjusted comparison of length of stay six months before and after the change in attending switch day from Tuesday to Thursday.

Results: The Length Of Stay (LOS) on our general internal medicine teams increased by 0.06 days (95% Confidence Interval 0.01-0.11) after we changed our service switch day from Tuesday (N=2092) to Thursday (N=2192). The difference persisted after adjustment for demographics including age, gender, payer status and race (increase 0.05 days, 95% CI 0.003 to 0.10). However, the increase in length of stay was no longer significant after adjusting for Diagnosis Related Groups (DRGs), discharge disposition (home, subacute rehabilitation, skilled nursing facility, long term acute care facility and hospice) and risk of readmission (0.03-day increase in LOS, 95% CI -0.03 to 0.09).

Conclusions: Our results indicate that length of stay does not increase after changing attending switch day from earlier in the week (Tuesday) to later in the week (Thursday). LOS remains a critically important quality metric that is impacted by many systems based factors. We believe our results fill a crucial gap in the literature and will allow groups to take other factors such as group preference, impact on attending work-life balance, learner needs and institutional needs in determining an appropriate switch day for the group.

146) SPLENIC MARGINAL ZONE LYMPHOMA—INCURABLE BUT BENIGN

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Introduction: The differential diagnosis for splenomegaly is wide, encompassing infectious causes such as Epstein-Barr virus and oncologic processes such as leukemia and lymphoma.

Case: A 69-year-old male with history of subdural hematoma, hypertension, hypercholesterolemia, myocardial infarction, type 2 diabetes mellitus, and hypothyroidism presented to the emergency department for a fall due to progressive right-sided weakness over the past 3 weeks and worsening back and neck pain between his shoulders. He reported 12 falls within the last week. Patient also noted decreased appetite, occasional nausea/vomiting, and 30-lb weight loss over the past month. Patient denied any recent travel or rheumatologic conditions. Of note, his daughter died of leukemia. CBC revealed no leukocytosis, mild thrombocytopenia, and acidosis. Abdominal CT revealed splenomegaly of approximately 25.4 cm, increased from 15.8 cm in 2016, but lack of lymphadenopathy. He was admitted for failure to thrive and concern for leukemia. Hematology was consulted for workup of splenomegaly which included bone marrow aspiration and BCR-ABL to rule out chronic myelogenous leukemia. A core bone sample could not be obtained. Peripheral smear revealed lymphocytosis with possible villous projections and normal red blood cell morphology and platelet count. Given the findings on CT and peripheral smear, the patient was subsequently diagnosed with splenic marginal zone lymphoma (SMZL) and referred to hematology for a 4-week cycle of rituximab as outpatient.

Discussion: SMZL is an indolent B-cell lymphoma that presents as splenomegaly and lymphocytosis without lymphadenopathy. Disease or infectious associations include chronic hepatitis C infection, Kaposi sarcoma-associated herpes virus, and autoimmune conditions involving B cell activation. Median age of onset is 65 years old. Due to the incurable nature but reasonably long survival of SMZL, treatment is only recommended for symptomatic splenomegaly, cytopenia, systemic symptoms, or progressive nodal disease. Treatment of underlying viral or autoimmune etiologies should be considered. Rituximab is as effective as splenectomy and considered first-line therapy by the European Society for Medical Oncology.

147) NON-UREMIC CALCIPHYLAXIS OF RIGHT MEDIAL THIGH

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Introduction: Calciphylaxis is due to progressive diffuse deposition of calcium within blood vessels of skin and underlying soft tissues, causing ischemic necrosis. Presentation manifests as exquisitely tender violaceous reticulated patches and necrotic eschars. It is often associated with chronic kidney disease or hypercalcemia.

Case Description: A 60-year-old female with a past medical history of systolic and diastolic heart failure, atrial fibrillation, obstructive sleep apnea, asthma, type 2 diabetes mellitus (DM), and chronic myelomonocytic leukemia with anemia of chronic disease presented with shortness of breath and was admitted for acute exacerbation of CHF. However, hospital course was prolonged secondary to calciphylaxis of the right medial thigh.

On presentation, patient was found to have a firm, tender area on her right medial thigh which she states was present for the past week. She was previously treated with a 5-day course of cephalexin without improvement and switched to 7-day course of vancomycin. Urine and blood cultures showed no growth. Ultrasound revealed minimal subcutaneous edema. Given black discoloration on medial aspect and ongoing pain, CT was performed which revealed subcutaneous stranding and skin thickening. Dermatology was consulted due to concern for possible calciphylaxis or warfarin-associated skin necrosis. Biopsy of lesion confirmed calciphylaxis; warfarin was discontinued, and patient was switched to apixaban. She was also started on alendronate and IV sodium thiosulfate 25g MWF with 3 months of therapy planned. Patient to follow up with dermatology and nephrology as outpatient.

Discussion: Although frequently associated with end stage renal disease, non-uremic calciphylaxis is also associated with female sex, DM, obesity, warfarin treatment, and poor nutritional status. Punch biopsy is used to confirm diagnosis which will reveal dermo-hypodermal and pannicular arteriolar calcification, subintimal fibrosis, and thrombotic occlusion. Treatment involves sodium thiosulfate, bisphosphonates, and calcimimetics; although, their efficacy remains uncertain. While a rare disorder, calciphylaxis carries a high morbidity and mortality with a 6-month survival of only 50%, in part due to the lack of approved treatment.

148) A SIMPLE AKI? NOT FOR THIS GUY

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Introduction: Granulomatosis with polyangiitis is a rare type of vasculitis that is most common in Caucasian adults. It primarily affects the sinuses, nose, trachea, lungs, and kidneys.

Case Presentation: A 57 year-old Caucasian male with history of upper GI bleeding, obstructive sleep apnea, and deviated septum with bilateral inferior and left middle turbinate hypertrophy presented to the ER with episodes of dizziness, pre-syncopal episodes, hypotension, decrease in appetite, and weight loss of 20 pound over the past two months. On physical exam he was positive for orthostatic vital signs. Notable labs at that time included RBC of 3.15, hemoglobin of 10.5, hematocrit of 31.7, CO2 of 20, BUN of 69, creatine of 5.6, and GFR of 11. The patient had normal kidney function just 4 months prior. Urine analysis was positive for hyaline casts (1-5), bacteria (1+), and protein (2+) as well as elevated WBC and RBC. Notable on CT exam were several nonobstructive stones in the left kidney. He was admitted for an acute prerenal AKI due to dehydration, hematuria, proteinuria, and anemia. Aggressive normal saline IV therapy was started along with Ceftriaxone for concern of infection in the urine culture. The patient had improved considerably by the next day, including decreased creatine and increased GFR. Further diagnostic labs resulted in a positive c-ANCA assay, myeloperoxidase antibody of 1.2, and proteinase 3 antibody >8.0. At this point granulomatosis with polyangiitis was suspected. The patient underwent a confirmatory renal biopsy and a quantiferon gold TB test was performed in preparation for immunosuppressive therapy due to previous exposure and treatment for INH for 9 months. The quantiferon gold TB skin test came back negative. The patient was started on IV Solu Medrol for 3 doses and tolerated well. On discharge the patient transitioned to empiric oral prednisone therapy and started weekly Rituxan for 4 doses, as the renal biopsy showed confirmatory results.

Discussion: Granulomatosis with polyangiitis is an autoimmune disorder where ANCA attacks the blood vessels. Common symptoms include nasal drainage and crusting, fatigue, weight loss, hematuria, fever, and cough. Approximately 90% of patients with granulomatosis with polyangiitis test positive for ANCA, 80-90% test positive for proteinase 3, and only 10% test positive for myeloperoxidase as our patient did. Confirmatory diagnostics must involve a renal biopsy.

149) DIAGNOSTIC AND MANAGEMENT REASONING TO REVEAL AN ELUSIVE CAUSE OF HYPOGLYCEMIA-INDUCED NEUROLOGIC INJURY

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Background: Symptomatic hypoglycemia is common in diabetics. We present a case of hypoglycemia-induced neurologic injury, where the etiology was uncovered using both diagnostic and management reasoning strategies.

Case: An 80-year-old woman with type 2 diabetes was admitted to the medical intensive care unit (ICU), after being found unresponsive for an unknown period, found to have a serum glucose of less than 50 mg/dL. Despite a 10% dextrose administration, she remained unresponsive and blood glucose level remained <100 mg/dL. Work-up for non-hypoglycemia induced altered mental status was negative including imaging, infectious work-up, negative toxicology screen. Electroencephalogram (EEG) demonstrated nonconvulsive status epilepticus. Work-up for hypoglycemia revealed beta-hydroxybutyrate, insulin, C-peptide levels consistent with endogenous insulin production (e.g., insulinoma or sulfonylurea toxicity). Empiric intravenous octreotide was administered with improvement in serum glucose, however, the patient remained unresponsive. MRI brain showed symmetric restricted diffusion involving bilateral cerebral peduncles. Serum glipizide level was 137 ng/mL (normal being undetectable). Additional history revealed indiscriminate use of glipizide despite discontinuation by the patient's primary care physician. The additional history, laboratory data, therapeutic challenge with octreotide, and elevated serum glipizide level confirmed sulfonylurea-induced hypoglycemia leading to structural brain abnormalities observed on MRI.

Discussion: Sulfonylurea-induced hypoglycemia accounts for 0.8% of hypoglycemic events among diabetes and is responsible for 10.7% of medication induced hospitalizations among adults aged 65 and older. Measuring serum ketones, insulin, and C-peptide levels can differentiate insulin from non-insulin mediated etiologies, and further, endogenous from exogenous etiologies. When an endogenous insulin mediated etiology is suspected, a therapeutic challenge with intravenous octreotide should be used.

NOTES


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