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# Wisconsin Chapter

## 2023 Abstracts

**Edwin L. Overholt Resident &  
Medical Student Vignettes**

**The Addis and Mary Lou Costello Family  
Excellence in Medicine Displayed Posters**

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**67<sup>th</sup> Annual Wisconsin Scientific Meeting**

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# Clinical Oral Vignettes

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## UNEXPLAINED LVH AND HEART FAILURE WITH PRESERVED EJECTION FRACTION: A CASE OF FABRY'S DISEASE

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**Introduction:** Fabry's disease is a pan-ethnic, rare X-linked lysosomal storage disorder caused by deficient  $\alpha$ -galactosidase A activity that leads to an accumulation of globotriaosylceramide (Gb3) in affected tissues. Cardiac involvement manifests as left ventricular hypertrophy, myocardial fibrosis, heart failure, and arrhythmias which are the main causes of morbidity and mortality. In female patients, it usually presents after the age of 40 and has a variable phenotypic presentation due to X-chromosome inactivation (lyonization). Therefore, the clinical presentation is variable making the diagnosis difficult to establish. Herein, we present a unique case of a female with Fabry's disease presenting as LVH with Heart Failure with Preserved Ejection Fraction (HFpEF).

**Case Presentation:** A 44-year-old female patient with a medical history of hypothyroidism, hypertension, and nonspecific inflammatory arthritis/connective tissue disease on hydroxychloroquine and leflunomide presented to the emergency department with progressive exertional chest pain and dyspnea over the past four weeks. Physical examination was unremarkable except for bilateral lower extremity retiform purpuric plaques. Laboratory tests indicated a mild persistent troponin elevation. The electrocardiogram findings demonstrated left ventricular hypertrophy and inferolateral ischemia.

A transthoracic echocardiogram was performed, revealing an ejection fraction of 70% but with left ventricular hypertrophy that raised concerns about an infiltrative etiology. Subsequently, a cardiac MRI was conducted, which showed focal myocardial enhancement in the inferolateral wall and a small perfusion defect consistent with myocarditis and small vessel infarct. Therefore, cardiac catheterization was performed and ruled out obstructive coronary artery disease.

Further investigation through cardiac biopsy revealed cardiomyocyte vacuolization without specific features indicating hydroxychloroquine toxicity. Additionally, a skin biopsy confirmed the presence of nonspecific thrombotic vasculopathy. As a result, the patient's hydroxychloroquine was discontinued, and she was discharged on colchicine without a definitive diagnosis. However, her symptoms persisted, and she had recurrent episodes of peri-myocarditis of unclear etiology.

Given recurrent episodes, a repeat cardiac MRI was performed. It demonstrated concentric left ventricular wall thickening and near-identical delayed enhancement in the inferolateral left ventricular wall, as well as diffuse involvement of the right ventricular wall with short T1 times. These findings raised suspicion of Fabry's disease. To further investigate, genetic testing was conducted, revealing the patient's heterozygosity for a pathologic variant. Consequently, enzyme replacement therapy was initiated, leading to a significant improvement in her symptoms.

**Discussion:** Fabry's disease is a rare lysosomal storage disease with major morbidity and mortality. It should be suspected in patients with LVH, chest pain, and HFpEF with unclear etiology. cMRI with late gadolinium enhancement initially in the basal inferolateral wall with short T1 times is suggestive of Fabry's disease requiring further genetic testing. Early initiation of enzyme replacement therapy is crucial in preventing disease progression.

## ABLEISM, A FOREIGN BODY, AND A DISAPPEARING TRACHEOESOPHAGEAL FISTULA

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**Introduction:** There are approximately 7.4 million individuals living with intellectual and developmental disabilities in the US. They die an average of 20 years younger than the general US population and are disproportionately affected by medical conditions such as epilepsy, autism spectrum disorders, mental health disorders, metabolic disease, and cardiovascular disease. Common medical conditions are underdiagnosed and undertreated due in part to underutilization of specialized healthcare services and inadequate allocation of resources. There are modifiable factors that influence these health inequities: limited training in addressing the unique needs of these individuals, communication challenges, inadequate access to healthcare, and implicit biases such as ableism.

**Case Presentation:** A 58-year-old male with intellectual disability and an activated healthcare power of attorney (HCPOA) presented for acute hypoxic respiratory failure from pneumonia not responsive to 5 days of empiric antibiotics. CT imaging of the chest demonstrated bilateral opacities consistent with multifocal pneumonia possibly related to aspiration from what was thought to be a tracheoesophageal fistula (TEF), difficult to confirm due to motion artifact. He was transferred from a community hospital given the potential need for thoracic surgery involvement. His brother (legal HCPOA) communicated advanced directives of DNR/DNI status on admission. However, he was amenable to temporary intubation if needed for facilitation of any procedural interventions that could prolong his brother's life without becoming ventilator dependent.

Upon transfer, the patient arrived in respiratory distress with respiratory rates in the 40-50s requiring high flow nasal cannula (HFNC) 60L at 100% FiO<sub>2</sub>. Stress dose steroids and aggressive pulmonary hygiene were started in addition to continued empiric antibiotics for treatment of acute respiratory distress syndrome (ARDS) and pneumonia. His condition remained unchanged during the first three days of admission with minimal reduction in his oxygen needs, weaned down to 50L at 80% FiO<sub>2</sub>. During each of the first three nights, members of the healthcare team pressed for a transition to end of life care against the stated wishes of the HCPOA. Care goals were discussed with the patient's brother daily, focused on a time limited trial of maximal medical therapy before making changes to his current treatment or long-term goals.

On the fourth night, the patient coughed up a large plastic foreign body and his respiratory status quickly recovered. Laryngoscopy identified an ulceration in the right piriform recess, the likely site this foreign body was retained. Interval chest imaging did not identify a TEF. Over the coming days he completed a course of antibiotics, was weaned down to room air, and was ultimately discharged with family back to his group home.

**Discussion:** This case aims to demonstrate an example of ableism bias and a near miss adverse event. We hope to highlight the importance of recognizing implicit biases and call for expanded medical education targeted at the specific needs of individuals living with intellectual and developmental disabilities as ways of improving health equity.

## A CASE OF THROMBOCYTOPENIA THAT PROVES WHY GUIDELINES CAN SAVE LIVES

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**Introduction:** Thrombocytopenia (platelet count below 150,000/mcL) is associated with a wide variety of conditions. Depending on the underlying cause, thrombocytopenia can be asymptomatic or severe, resulting in potential life-threatening bleeding or thrombosis. In an outpatient setting in the absence of active bleeding, common causes of thrombocytopenia include immune thrombocytopenia, liver disease, myelodysplastic syndromes, and HIV.

**Case Presentation:** A 75-year-old woman presented to establish care with a new PCP. Review of the patient's records revealed a six-month history of thrombocytopenia and leukopenia without active bleeding. Initial workup for thrombocytopenia included screening for liver disease which was unremarkable. HIV testing was recommended, but the patient declined. Repeat CBCs continued to show thrombocytopenia and leukopenia so the patient was referred to hematology. Further workup by hematology included an abdominal ultrasound and bone marrow biopsy which were both unremarkable. At this time, it was suspected that the cause of the thrombocytopenia was immune. Hematology continued to monitor the patient and suggested potentially initiating steroid treatment. The new PCP noted that the most recent CBC showed pancytopenia (WBC 3.1 K/mcL, HGB 11.7, HCT 35.3, MCV 83.6, RDW 16.4, PLT 67,000/mcL). Pancytopenia is uncommon in immune thrombocytopenia; thus, the patient was advised that the clinical picture was inconsistent with immune thrombocytopenia and was encouraged to seek a second opinion. The patient consulted a second hematologist, and it was noticed that the patient's condition had deteriorated since she was last seen. She was extremely fatigued, had oral ulcers, recently had oral candidiasis, had joint stiffness, dizzy spells, and had lost 20 pounds unintentionally. Autoimmune testing was ordered which came back negative. Infectious Disease Testing for Hepatitis B, HIV, EBV, and CMV was ordered, and the results showed that the patient was HIV-1 positive with a viral load of 1,390,000/mL and a CD4 count of 43/mcL. During her first appointment with Infectious Disease, it was noted that she had two new 1cm violaceous nodules which were presumed to be Kaposi sarcoma lesions. She was started on Biktarvy and after four months, her viral load was nearly undetectable (59/mL, CD4 count 215/mcL), and her WBC count and platelet count had recovered (WBC 4.9 K/mcL and PLT 160,000/mcL).

**Discussion:** This case demonstrates the importance of adherence to clinical guidelines. Routine HIV screening is recommended for all adults regardless of their risk factors. Additionally, HIV should never be overlooked in any patient with thrombocytopenia as HIV is an important, treatable cause of thrombocytopenia. Delay in obtaining HIV testing led to a six-month delay in treatment initiation for this patient and lead to her developing two AIDS-defining illnesses: oral candidiasis, and Kaposi sarcoma. Had the patient been tested sooner, extensive medical workup could have been avoided and treatment could have been initiated sooner. Further, had routine HIV screening been performed on this patient, the HIV may have been detected before the thrombocytopenia developed. Approximately 15% of persons living with HIV are unaware of their infection. Routine screening for HIV is essential as early treatment initiation significantly reduces risk of AIDS related events or death.

## COLONIC LIPOMA INTUSSUSCEPTION MANAGED BY ENDOSCOPIC SUBMUCOSAL DISSECTION: A NOVEL THERAPEUTIC MODALITY

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**Introduction:** Large bowel obstruction accounts for approximately 25% of all intestinal obstructions, of which less than 5% are secondary to intussusception. Intussusception can be further characterized by etiology, location and direction of telescoping. Colonic lipomas are benign, relatively common incidental findings on endoscopy, and are rarely symptomatic.

**Case Description:** A 43-year-old male with a history of alcoholic pancreatitis presented with subacute colicky epigastric pain without any red-flag symptoms. Examination revealed normal vital signs and generalized abdominal distension with tenderness. Labs were unrevealing and lipase was within normal limits. CT scan revealed a 6 cm lesion arising from the hepatic flexure suspected lead-point for intussusception of the transverse colon with partial large bowel obstruction. After discussion with surgery, it was decided to remove the lesion via Endoscopic Submucosal Dissection (ESD). Endoscopic evaluation revealed significant colonic wall edema and large lipoma resected successfully by ESD. Due to its large size, it was retrieved only after sectioning into multiple pieces. The mucosal defect was approximated by 5 Endoclips. The patient had complete resolution of symptoms after the procedure and was discharged home after overnight observation.

**Discussion:** Colonic intussusception secondary to a large lipoma is a rare condition. In this case, ESD was performed to alleviate mechanical bowel obstruction with great efficacy. ESD represents a great alternative to open surgery insofar as reducing costs to healthcare systems, recovery time, and potential sparing of the intestines by avoiding surgery. Bowel perforation is a feared complication of ESD and can occur in up to 5% of cases; however, this can also be managed endoscopically with clips to approximate the margins of any defect. We believe ESD offers potential therapeutic modality as evident in this case, and more literature may aid in exploring this prospect.

## EBSTEIN-BARR VIRUS AS AN USUAL CAUSE OF ASEPTIC MENINGITIS IN AN IMMUNOCOMPETENT ADULT WITH RECENT LOBAR PNEUMONIA

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**Introduction:** Aseptic meningitis commonly results from enteroviruses and HSV-2 (Wright et al., 2019). Epstein-Barr Virus (EBV) is a much less frequent cause, and extremely rare in individuals with intact immune function (Wang et al., 2020). This case report presents a confirmed instance of EBV-associated aseptic meningitis in an otherwise healthy young woman who recently received steroid and antibiotic treatment for lobar pneumonia. The patient had a history of a mononucleosis-like illness several years ago; however elevated IgG and IgM titers of EBV detected in the cerebrospinal fluid (CSF) indicated recent EBV infection.

**Case Presentation:** A 29-year-old woman with a medical background of migraines and recent lobar pneumonia, treated with Augmentin and prednisone, presented to the Emergency Department with severe occipital headache, nuchal rigidity, and photophobia. She exhibited mild leukocytosis and an elevated temperature without fever. Upon admission, CT angiography of the head and neck yielded normal results. Lumbar puncture revealed neutrophilic pleocytosis with low-normal glucose levels, suggesting bacterial meningitis. The patient received empiric treatment consisting of intravenous dexamethasone, ceftriaxone, vancomycin, and acyclovir.

During admission, viral pathogen panels and cultures performed on initial lumbar puncture cerebrospinal fluid (CSF) were normal. Given concern for atypical causative agent, subsequent lumbar puncture was performed on day three of admission, which indicated lymphocytic pleocytosis consistent with aseptic meningitis. CSF studies confirmed EBV as the etiological agent through positive IgG and IgM serology as well as a positive EBV PCR from the second lumbar puncture. Steroid, antibiotic, and antiviral therapies were discontinued; she experienced complete resolution of symptoms and was promptly discharged home in good condition.

**Discussion:** This case report highlights the infrequent occurrence of EBV meningitis in immunocompetent adults. We postulate that the previously reported mononucleosis-like illness our patient reported was not attributable to EBV, but rather to another viral etiology such as cytomegalovirus (CMV). Our patient likely contracted EBV recently, which manifested initially as a viral prodrome, followed by secondary pneumonia, and ultimately aseptic meningitis.

The initial lumbar puncture findings in EBV meningitis may mimic those associated with bacterial etiologies; empiric treatment for bacterial meningitis is appropriate (Mount et al., 2017). However, the presence of negative cultures and positive EBV PCR in the CSF can rule out bacterial causes, raising suspicion for EBV-associated aseptic meningitis. Obtaining both EBV serology (IgG and IgM) and repeating the lumbar puncture in patients with negative CSF studies may prove beneficial in confirming the transition to lymphocytic pleocytosis, ultimately allowing discontinuation of unnecessary treatments, such as intravenous antibiotics, antivirals, and steroids.



## A TICKY CASE OF ANAPLASMOSIS

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*Anaplasma Phagocytophilum* is a tick that can cause Anaplasmosis or Human Granulocytic Anaplasmosis. According to reports from the CDC, there has been a significant increase in the number of cases reported between 2000 to 2017 with a peak of 5,762 cases. It is important to consider this illness, especially between early spring to fall, as delay in appropriate treatment can result in severe illness including multiorgan failure and HLH. A 71 year old female with no medical problems was transferred from an outside facility for evaluation of five days of syncope, generalized weakness, headache, and poor oral intake. Previously healthy, she reported that she was an avid hiker and spent a lot of time outdoors and that her symptoms abruptly began after a morning hike. Based on labs obtained from the initial admitting hospital she was found to be mildly hyponatremic and bi-cytopenic with a stable hemoglobin. A broad infectious and hematologic workup was initiated, including a tick panel which was pending. At this point the patient began to have neutropenic fevers and become hemodynamically unstable. She was started on cefepime for the neutropenic fevers and doxycycline for possible tick-borne illness given her history. At the same time, her ferritin nearly doubled from 8,000 and her d dimer was persistently elevated >35. There was high suspicion for a malignancy and particular concern for hemophagocytic lymphohistiocytosis (HLH) based on lab trends. She meet 4 of the 9 criteria for HLH, just 1 short of a diagnosis, but with the concern for malignancy, a bone marrow biopsy was performed. Clinically the patient was starting to improve- subjectively feeling stronger, afebrile, and counts were improving. Despite this, preliminary read from the heme pathologist was concerning for a high grade T Cell Lymphoma and secondary HLH. She was then transferred to the heme malignancy service for chemotherapy at which place her anaplasmosis PCR came back as positive. It was thought that her symptoms were in fact all related to this tickborne illness and she was discharged home on doxycycline. 3 days after discharge her bone marrow biopsy came back positive for anaplasmosis and negative for malignancy. Patients with leukopenia, thrombocytopenia, hepatitis, fevers, and a history of outdoor activity should always have anaplasmosis on their differential, especially during peak season. Anaplasmosis-induced HLH is very uncommon and management and prognosis is based on case reported anecdotal evidence but prognosis has been fatal in up to 75% on patients. The data dose support that early initiation of treatment can help improve mortality by up to 50%, so the threshold for treatment should be low. Just like in our case, doxycycline was initiated within 12 hours of admission to the hospital and 5 days of symptoms which overall likely contributed to the patient not developing HLH and ultimately saving her life.

## **EXPLORING THE INTERPLAY BETWEEN POLYCYTHEMIA VERA AND FOCAL SEGMENTAL GLOMERULOSCLEROSIS: A CHALLENGING CASE OF NEPHROTIC SYNDROME**

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This presentation delivers an in-depth review of a complex case centered around nephrotic syndrome secondary to Focal Segmental Glomerulosclerosis (FSGS), set against the backdrop of Polycythemia Vera (PV), an intersection rarely explored in medical literature.

The case revolves around a 63-year-old female with an extensive medical background inclusive of PV, Type 2 Diabetes, and hypertension. She reported with renal impairment symptoms, including increased lower limb edema and shortness of breath, highlighted by nephrotic range proteinuria with levels soaring up to 20.99 g/g. A renal biopsy pinpointed the presence of FSGS and moderate Diabetic Nephropathy (DN), necessitating an integrative therapeutic approach.

Her treatment protocol comprised high-dose prednisone, followed by a planned tapering course, and the introduction of cyclosporine therapy. This calcineurin inhibitor aimed at modulating the immune response towards the kidneys. The patient's associated conditions required meticulous management. This involved controlling hypertension with an angiotensin receptor blocker and maintaining stringent diabetic control, considering DN's contribution to her renal pathology.

A distinctive aspect of the case was the potential influence of PV in the development of FSGS. Characterized by an increased red blood cell mass, PV could theoretically impact renal hemodynamics, influencing the genesis or progression of glomerular diseases. This association, barely charted in clinical literature, offers innovative insights into the potential convergence of hematological disorders and renal pathology.

This presentation emphasizes the importance of a comprehensive, multidisciplinary approach when managing patients with multiple comorbidities. It also highlights the possible correlation between PV and FSGS, providing a potential pathway for improved understanding and management of similar complex cases in the future. This case bridges a significant gap in our understanding of the interface between hematological and renal disorders, making strides towards enhancing patient care and management strategies.

## DIAGNOSIS OF A RARE FUNGAL INFECTION IN LEUKEMIA PATIENT AND ITS TREATMENT IMPLICATIONS

Lillian Zheng, MD; Ali Shamsa

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**Background:** *Scopulariopsis* species are fungal pathogens resistant to a broad range of antifungal agents and can cause a life-threatening invasive fungal sinusitis (IFS) that typically affects immunocompromised patients. Here, we present the first published case of an immunocompromised patient with *Scopulariopsis* IFS treated with the novel antifungal Olorofim, a new Dihydroorotate dehydrogenase inhibitor shown to have in vitro efficacy against *Scopulariopsis*.

**Case presentation:** A 65-year-old woman with relapsed acute myeloid leukemia (AML) presented with left-sided facial pain that was ongoing for multiple days with associated yellow-green nasal drainage from her left nasal cavity, increased tearing in left eye, and decreased sense of smell. She is chronically pancytopenic as a result of AML and had been taking prophylactic antimicrobials, which included the antifungal posaconazole. Magnetic Resonance Imaging (MRI) demonstrated mucosal thickening in left sinuses and nasolacrimal duct with increased enhancement from prior MRI and possible involvement of the left orbit, most concerning for IFS. The patient was immediately started on broad spectrum fungal coverage on admission which consisted of amphotericin B, micafungin, isavuconazole with guidance from infectious disease. Nasal endoscopy was performed with debridement of left maxillary, sphenoid, and ethmoid sinuses and biopsy was obtained demonstrating *Scopulariopsis* spp.

As current therapies were likely insufficient due to the resistant nature of *Scopulariopsis* spp. and further evidenced by lack of improvement on repeat imaging and symptoms, an application for compassionate use of Olorofim was submitted. Over the next couple weeks, while the application was pending, the patient continued to receive broad-spectrum antifungal therapy. Additionally, she underwent adjunctive treatment with hyperbaric oxygen therapy. Given patient's poor prognosis, interdisciplinary goals of care discussions took place throughout her hospital course. The patient wished to have no limitations in her care. Her hospital course was unfortunately complicated by recurrent fevers, non-infectious diarrhea, severe malnutrition, and electrolyte derangements as a result of adverse effects of antifungals. After approval and arrival of Olorofim, she was transitioned to Olorofim monotherapy for at least six months. Follow-up MRI performed one month after discharge showed interval improvement with less pronounced soft tissue thickening and enhancement.

**Discussion:** Prior to her IFS infection, our patient was under consideration for a bone marrow transplant (BMT) for treatment of refractory TP53 AML. She struggled with the news that BMT was no longer an option until her IFS infection resolved; however, her new infection was unlikely to be effectively cleared due to her immunocompromised status. Even with three different classes of antifungals administered over multiple weeks during her hospital stay, she had no apparent or radiologic evidence of disease regression. Her most recent radiologic finding, however, indicated some disease regression, demonstrating that Olorofim has potential for treatment of *Scopulariopsis* spp. in immunocompromised patients.

# Research Oral Vignettes

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## CHARACTERISTICS OF PATIENTS WITH LUNG UPTAKE ON N-13 PET MPI

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**Introduction:** Lung uptake may be seen on N-13 positron emission tomography (PET) myocardial perfusion imaging (MPI), which may compromise the quality of the perfusion images and image interpretation. We aimed to evaluate patient characteristics that could help identify these challenging cases, which could subsequently be used for quality improvement in the nuclear lab.

**Methods:** From 873 patients who underwent MPI with N-13 PET between 01/03/22-01/30/23, we identified 102 patients (11.7%) who had increased lung uptake reported by the interpreting physician. From the same total cohort, we identified 102 matched controls without increased lung uptake. We collected patients' characteristics from the electronic medical record, N-13 PET, and echocardiographic parameters and compared the prevalence of those characteristics in the two groups of patients. **Results:** Patients who were current smokers (26 vs 10%,  $p=.002$ ), had chronic obstructive pulmonary disease (COPD)(37 vs 22%,  $p=0.01$ ), pulmonary hypertension (PHTN) (30 vs 14%,  $p=0.004$ ), end-stage renal disease (13 vs 3%,  $p=.003$ ), history of bypass surgery (25 vs 14%;  $p=0.028$ ), or systolic heart failure (27 vs 11%,  $p=0.002$ ) were more likely to have lung uptake on N-13 PET. Patients with more dilated left ventricles, especially moderately (9 vs 1%;  $p=.042$ ) and at least moderate tricuspid regurgitation (9 vs 2%;  $p=.004$ ) on echo were also more likely to have lung uptake on N-13 PET. There were no significant differences between the groups in N13 PET parameters.

**Conclusion:** Patients undergoing N-13 PET MPI who are current smokers, have COPD, PHTN, systolic heart failure, more dilated left ventricle, or have a higher degree of tricuspid regurgitation are more likely to have increased lung uptake. We hope to analyze these and additional data further to generate a simplified predictor that could be used to screen patients before N-13 PET who might benefit from an alternative imaging strategy.

## **IMPROVING INTERNAL MEDICINE INTERN CLINICAL TRANSITION VIA INTENSIVE ORIENTATION**

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Graduate medical education is the crucial step of professional development between medical school and autonomous clinical practice. The transition from a medical student to an intern is a turbulent journey for many new incoming residents. The transition is even more difficult for international medical graduates. Currently, no formal guidelines exist to address intern orientation.

Our project aims to break down and fix the factors which limit an intern to achieve an adequate level of competency. The objective of our study was to make intern transition more efficient by providing intensive orientation and to improve the intern's confidence in delivering quality patient care. Our goal was to enhance intern's confidence in the following aspects: Accessing and using EMR, writing patient notes, case presentation skills, patient and intra-healthcare communication, clinical assessment, and time management.

The most important skills that hinder the transition of interns to senior year residents were identified and using a self-evaluation tool we compared the confidence level of the control group and test group. The intensive orientation phase was conducted in the first 3 months of the internship and included four phases: introduction, extensive intervention, open question forum, and 'teach back phase'. The intervention included giving PowerPoint presentations and relevant reading material on topics and practicing skills acquired using simulated cases. The control group (IM intern batch of 2021) and the test group (IM intern batch of 2022) rated their confidence levels at the end of 6 months of internship in the targeted interventions using a Likert scale from 1 (no confidence) to 5 (full confidence).

Our study showed improved outcomes in the confidence levels of the interns in all targeted interventions. The overall impact of improvement in all other areas led to improvement in time management skills, which is the most essential skill to develop to become a successful intern. All of the participants in the study were international medical graduates with at least 6 months of prior clinical experience in the United States; however, none with exposure to our EMR system. Based on our results, we recommend proactive intensive guidance to improve the confidence of interns during their clinical transition.

## COMPARISON OF PREDICTED BENEFIT USING RS CLIN VERSUS OBSERVED BENEFIT IN A US REGISTRY OF STAGE I ER POSITIVE HER2 NEGATIVE HIGH ONCOTYPE DX RS BREAST CANCER

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Tumor gene signatures and subsequent recurrence risk analytics have improved appropriate patient selection for chemotherapy, but their ability to identify appropriate benefit of adjuvant chemotherapy remains to be clarified. Multivariable Cox proportional hazards regression was used to determine predictors of overall survival and to estimate the absolute benefit of therapy in female patients between the ages of 18 and 70 identified to have stage IA, IB or IC, hormone positive, HER2 negative breast cancers with negative surgical margins compared to the predicted absolute benefit determined by the RSclin tool. Of these patients, the absolute benefit of chemotherapy was 8.64% (5.31% to 11.96%; 95% CI) overall with a predicted benefit of 23.45% (11.61% SD) with tamoxifen therapy or 20.07% (10.38% SD) with aromatase inhibitor therapy. Stage IA breast cancer absolute benefit was -6.24% (-21.80% to 9.32%; 95% CI) with predicted benefit of 19.79% (10.83% SD) in tamoxifen and 16.90% (9.86% SD) in aromatase inhibitor therapies. Stage IB absolute benefit was 13.12% (6.45 to 19.79%; 95% CI) with predicted benefit of 20.47% (11.20% SD) in tamoxifen and 17.43% (9.98%) in aromatase inhibitor therapies. Stage IC absolute benefit was 7.84% (3.89% to 11.79% 95% CI) with a predicted benefit of 24.53% (11.58% SD) in tamoxifen and 21.02% (10.36% SD) in aromatase inhibitor therapies. This work clarifies the benefit to patients with stage IB and IC hormone receptor positive HER2 negative breast cancers, however, the RSclin tool overestimates the benefit in IB and IC stages requiring caution discussing benefit of therapy.

# **Resident Posters**

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# 1) RUNNING IN THE FAMILY: A RARE CASE OF PRIMARY PULMONARY MALT LYMPHOMA IN SISTER AND BROTHER

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**Introduction:** Mucosa-associated lymphoid tissue (MALT) derived lymphoma is an extranodal low-grade B-cell lymphoma. Primary pulmonary MALT lymphoma is rare, representing only 0.5% of all primary lung cancers. The median age at diagnosis is 50-60 years.

**Case Description:** We report 2 cases of pulmonary MALT lymphoma (sister and brother).

**Case A:** A 74-year-old woman with a history of hypertension and thyroid carcinoma s/p thyroidectomy in 2018, a former smoker, had a right upper lobe pleural-based nodule measuring 1.1 cm discovered in 2017 incidentally. It has been followed with serial CTs since then. In 2020, her CT chest showed an enlarging right upper lobe ground glass opacity containing some central punctate nodularity and measuring 2.2 x 2 cm. She reported no cough, shortness of breath, fever, night sweats, or weight loss.

Subsequent PET CT scan showed moderate focal activity of the right upper lobe apical punctate nodular lesion concerning adenocarcinoma. She underwent a robotic right upper lobe lobectomy with mediastinal lymph node dissection. Pathology of the lung nodule revealed extranodal marginal zone lymphoma and immune chemistry positive for CD20 and negative for CD3, CD5, CD10, CK1 16, and BCL6. Lymph nodes showed no definitive morphological features of lymphoma.

**Case B:** A 74-year-old male with a history of hypertension, non-smoker, was found to have an incidental pulmonary nodule while undergoing imaging for his shoulder pain in 2017. He had no pulmonary symptoms, fever, night sweats, or weight loss. A CT chest showed a 1.4 x 1.3 cm nodule in the right lower lobe superior segment. It had moderate overlying activity on PET CT. He underwent wedge resection of the right lower lung lobe by video-assisted thoracoscopic surgery. The pathology was consistent with extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue.

They have been monitored closely by oncology. Follow-up imaging so far showed no disease activity.

**Discussion:** MALT lymphoma is commonly associated with chronic antigen stimulation, including auto-antigens and microbial antigens. Hashimoto's thyroiditis, Sjogren's syndrome, systemic lupus erythematosus, and multiple sclerosis are the risk factors for pulmonary MALT lymphoma.

Around 30% of the patients are asymptomatic; others may present with fever, cough, dyspnea, chest pain, weight loss, hemoptysis, and malaise. CT chest is the imaging modality of choice; they often present as incidental solitary or multiple lesions, including nodules, mass, consolidations, and diffuse interstitial patterns. Hilar and mediastinal lymphadenopathy is present in some patients. FDG-PET is recommended for staging, especially in the lung. Clinical presentation and imaging findings are non-specific, leading to misdiagnosis. Hence pathology is the definitive method to diagnose pulmonary MALT lymphoma. Treatment includes surgical resection, which is both therapeutic and diagnostic. Chemotherapy and radiation are used in non-resectable cases, disease progression, or recurrence cases. No family predisposition has been reported in MALT lymphomas. A case report published in 2012 reported MALT lymphoma in mother and daughter but at different sites. Interestingly, our patients, brother and sister, are diagnosed with pulmonary MALT lymphoma. They do not have any autoimmune disorders. Hence we would like to present this rare occurrence.

## 2) AUTOIMMUNE HEMOLYTIC ANEMIA ASSOCIATED WITH IMATINIB MESYLATE: A RARE PHENOMENON

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**Introduction:** CML is a myeloproliferative disorder that results from a reciprocal translocation between chromosomes 9 and 22, producing a constitutively expressed BCR-ABL1 tyrosine kinase. Imatinib, a BCR-ABL1 tyrosine kinase inhibitor, is effective and well-tolerated in treating CML. This report outlines a rare phenomenon of AIHA in a patient being treated with imatinib therapy.

**Case Report:** A 73-year-old male was diagnosed with CML in June 2019. His labs showed a hemoglobin (Hb) level of 13.8 g/dL, a WBC count of  $81.2 \times 10^9/L$ , and a platelet count of  $264 \times 10^9/L$ . He was initiated on imatinib 400 mg once daily, which was initially well tolerated. Within one month, the patient achieved a complete hematologic response. By April 2020, the patient achieved a major molecular response (MMR) of 0.1 % or less of BCR-ABL transcript level in peripheral blood.

In January 2021, he endorsed complaints of shortness of breath on exertion. Laboratory findings showed new anemia with a Hb level of 8.9 g/dl, but he remained in MMR. Further evaluation showed a positive direct antiglobulin test. Additional labs showed elevated bilirubin at 2.7 mg/dL, LDH at 672 U/L, reticulocyte count  $435.5 \times 10^9 /L$ , and haptoglobin  $<3$  mg/dL. Labs were consistent with AIHA; therefore, he was started on prednisone 60 mg once daily. Following the initiation of prednisone, the patient's Hb improved with a peak of 13.3 g/dL. Despite the response to prednisone, he could not tolerate the drug due to side effects, leading to the tapering of prednisone and concurrent initiation of rituximab in June 2021. Following four weekly doses of rituximab, his Hb level was remeasured and found to be 9.3 g/dL.

His AIHA was thought to be secondary to imatinib therapy, and the drug was discontinued in August 2021 with close monthly monitoring of his BCR-ABL. With the discontinuation of imatinib, Hb gradually improved. Labs after 4 months revealed a Hb level of 13.2 g/dL. However, in December 2021 molecular testing by PCR showed relapsing; hence we started him on dasatinib 50 mg once daily. Following the initiation of dasatinib, the patient achieved MMR again in May 2022, and his Hb remained stable at 13 g/dL.

**Discussion:** Imatinib is generally well-tolerated and is standard treatment in CML patients. Hematological side effects include cytopenias, particularly anemia. In reviewing the literature, Novaretti et al. reported the first case of AIHA with imatinib mesylate, and Hamamyh et al. discussed 54 cases of AIHA in CML; among these, 4 cases included imatinib as a part of the CML therapy.

The treatment of AIHA for the reported cases in these articles included steroids, rituximab, bortezomib, plasmapheresis, and splenectomy. The FDA data for imatinib recommend managing cytopenias with dose reduction or dose interruption and rarely require treatment discontinuation. These recommendations are not necessarily applicable to patients with an autoimmune etiology responsible for their associated cytopenias, as seen in the patient described in this report. Imatinib-induced AIHA should be considered in patients being treated with imatinib for CML if they develop unexplained anemia.

### 3) AN ATYPICAL PRESENTATION OF COLLAGENOUS GASTROENTERITIDES

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**Introduction:** Collagenous gastroenteritides (CG) are characterized by a sub-epithelial collagen deposition with entrapped inflammatory cells and capillaries, forming a band with a width of more than 10  $\mu\text{m}$ . CG most commonly affect the colon (collagenous colitis), infrequently the small intestine (collagenous sprue, 120 cases reported), and rarely the stomach (collagenous gastritis, 168 cases reported). Typically, patients with CG present with diarrhea, gradual weight loss, and severe malabsorption resulting in numerous dietary deficiencies. Various therapy strategies have been published in case studies; however, there is not a consensus on the best treatment strategy. Herein, we present a unique case of concurrent collagenous sprue and collagenous gastritis with atypical presentation.

**Case Presentation:** A 78-year-old lady presented to the gastroenterology clinic for evaluation of abdominal pain, nausea, constipation and unintentional weight loss. Symptoms have been intermittent for 6 months. On physical examination, her abdomen was soft and non-tender with normal bowel sounds. Labs including CBC, comprehensive metabolic panel and iron studies were unremarkable. Recent abdominal CT angiography showed atrophic pancreas and atherosclerotic changes of the proximal celiac artery with the distal segment remaining opacified. Given weight loss and atrophic pancreas, esophagogastroduodenoscopy (EGD) with endoscopic ultrasound (EUS) was performed to rule out pancreatic cancer. EGD showed two non-bleeding gastric ulcers, gastritis, scalloped duodenal mucosa and pancreatic parenchymal changes consistent with atrophy. Gastric and duodenal biopsies showed collagenous gastritis and collagenous sprue, respectively. She was started on pantoprazole and referred to a nutritionist to start a gluten-free diet (GFD). EGD was repeated 3 months later and showed persistence of gastritis and scalloped mucosa in the duodenum but improvement of gastric ulcers. She was started on a prednisone taper and transitioned to Budesonide. She had a complete resolution of her symptoms after.

**Discussion:** Patients with CG typically present with diarrhea and severe malabsorption. However, atypical presentation with constipation and weight loss should be considered. In addition, gastric ulcers secondary to collagenous gastritis are extremely rare. Treatment of GC can be extremely challenging as there is not universal treatment strategy. Given the underlying similarities to gluten-sensitive enteropathy, a GFD is a reasonable initial treatment. Up to 42% of patients with CG can achieve remission with a GFD only. However, transition to steroids should be considered in refractory cases. Adding a proton-pump inhibitor helps to promote remission in the presence of gastric ulcers. More studies are needed to establish a standard therapeutic strategy.

## 4) SPLENIC INFARCTION AS AN EARLY COMPLICATION OF COVID-19

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**Introduction:** The COVID-19 pandemic has been challenging for the health-care system since the beginning with its wide variety of presentations ranging from asymptomatic, respiratory, gastro interstitial, and prothrombotic to mortality. In recent years, thrombotic complications have been recognized as being a significant component of this disease. Hyperinflammatory responses caused by the virus may contribute to thromboembolic complications. Several infarctions of abdominal organs have been reported in recent years, including splenic, renal, and intestinal infarctions. Here we describe a case of a 55-year-old male with a COVID-19 infection with a resolution of respiratory symptoms presented with complaints of abdominal pain and found to have a splenic infarction. This report discusses the mechanism of thromboembolic complications, the diagnostic approach, and management of the splenic infarctions.

**Case presentation:** A 55-year-old male presented to the emergency department with a complaint of left-sided upper abdominal pain and vomiting. Seven days prior to the presentation, the patient tested positive for COVID-19. The patient's symptoms improved over the next 2 to 4 days. In the emergency department, the patient was hemodynamically stable. Physical examination was significant for mild tenderness at the left upper quadrant and epigastric area without guarding or rebound tenderness. Lab work revealed leukocytosis, elevated CRP, and D-dimer level. CT chest/abdomen/pelvis with contrast revealed multiple wedge-shaped and linear low attenuating lesions at the superior aspect of the spleen without peri splenic hemorrhage or subcapsular hematoma representing splenic infarcts. A Heparin drip as per DVT protocol was initiated. Further work-up to rule out hypercoagulable state revealed within normal limits of protein C and protein S, negative ANA. Transthoracic echocardiogram and venous Doppler scan were negative. There are some case reports, but no specific guidelines about treatment with anticoagulation for splenic infarcts related to COVID. After a discussion with the patient, we decided to start prophylactic doses of rivaroxaban for 30 days which was his strong preference.

**Discussion:** The pathophysiology behind splenic infarction is if blood flow to the spleen is compromised, causing tissue ischemia and eventual necrosis. It may be the result of arterial or venous occlusion. The most common causes are blood-borne malignancy, myelofibrosis or hypercoagulable states, thromboembolic disorders, blunt abdominal trauma, or pancreatic disorders. Splenic infarction is rarely reported in COVID-19 literature and is not a common complication of coronavirus pneumonia, but physicians should consider splenic infarction as a differential diagnosis when patients presented with abdominal pain even complete resolution of COVID-19 infection. Early detection will have better prognostic implications for patients given that prompt anticoagulation would reduce the risk of complications secondary to end-organ ischemia that results from thromboembolic events.

## 5) CHEMICAL MENINGITIS FOLLOWING INTRATHECAL METHOTREXATE THERAPY

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**Introduction:** Chemical meningitis, also known as aseptic meningitis, refers to the inflammation of the meninges caused by non-infectious agents such as intrathecal injection of medication or other equipment utilized in neurosurgical procedures. High-dose methotrexate is used to treat ALL, leptomeningeal metastases, and central nervous system lymphomas. The precise mechanisms of intrathecal methotrexate-associated chemical meningitis remain unclear, but the proposed hypothesis is that methotrexate causes an elevation in CSF homocysteine, which is an excitatory agonist of the N-methyl-D-aspartate (NMDA) receptor, or direct neuronal damage by methotrexate. The clinical presentation of methotrexate-induced chemical meningitis typically includes headache, fever, altered mental status, and other signs consistent with meningitis. Here, we present a case of chemical meningitis caused by the intrathecal application of methotrexate chemotherapy.

**Case presentation:** A 70-year-old female with a past medical history of metastatic NSCLC (poorly differentiated adenocarcinoma) diagnosed in 2021 was found to have cerebellar metastasis for which she received gamma knife radiation. After 2 months, the follow-up MRI showed abnormal enhancement in the right parietal region concerning leptomeningeal carcinomatosis. Hence, she was started on intrathecal methotrexate therapy, administered 3 days apart via an Ommaya reservoir. Within 1 week of the third dose of intrathecal methotrexate, she developed transient altered mental status and fever. The workup was negative for CBC, CMP, magnesium, lipase, troponin, TSH, blood culture, and non-contrast CT of the head. CSF studies did not reveal any acute or concerning abnormalities. Methotrexate was discontinued, and dexamethasone was started. Her altered mental status continued to wax and wane but progressively improved.

**Discussion:** Chemical meningitis is a rare neurological adverse effect of intrathecal methotrexate (ITMTX). It is a diagnosis of exclusion that must be considered in patients experiencing fever and neurologic symptoms who have had a direct intrathecal injection of methotrexate. Differential diagnosis is essential to rule out bacterial meningitis through lumbar puncture with analysis of cerebrospinal fluid which reveals lymphocytic pleocytosis, elevated protein levels, and normal glucose levels in the absence of bacterial pathogens. Management strategies for methotrexate-induced chemical meningitis primarily involve discontinuing the offending drug and providing symptomatic relief. Close monitoring of the patient's neurological status and serial CSF analyses may be necessary. In severe cases, corticosteroids or other immunosuppressive agents may be considered to alleviate inflammation and prevent complications. This case emphasizes the importance of early recognition of this reversible condition, as it may reduce the risk of invasive procedures, cost, and exposure to antimicrobial therapy.

## 6) A CASE OF “MOUTH SPOTS” IN GI ONCOLOGY CLINIC

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**Introduction:** Colorectal cancer (CRC) is the fourth most commonly diagnosed cancer in the world with a global incidence of nearly 2 million new cases per year. Risk factors for development of CRC include obesity, sedentary lifestyle, red meat consumption, tobacco/alcohol use, and inflammatory bowel disease. Up to 5% of CRCs occur in the setting of genetic syndromes, with germline mutations being identified more frequently in patients aged 50 or younger at diagnosis.

**Case presentation:** A 35 year old female with history of metastatic rectal cancer on FOLFOXIRI/bevacizumab presented to oncology clinic for routine follow-up. Her rectal cancer had been diagnosed 14 months prior following symptoms of RUQ pain, intermittent hematochezia, and 15 pound weight loss. Imaging work-up revealed a large rectal mass and numerous liver lesions, with liver and rectal biopsy confirming her diagnosis. During her office visit, she described discovering dark spots on her mouth that had waxed and waned over the past 6-12 months. Physical exam revealed scattered hyperpigmented macules on her lips and tongue. A clinical diagnosis of Peutz-Jeghers was made based on these characteristic findings. Notably, she was not aware of her family’s oncological history, as she had been adopted at birth. Her prior germline testing was negative for an STK11 mutation. She was referred back to genetics for additional counseling on genetic testing.

**Discussion:** Peutz-Jeghers syndrome (PJS) is an autosomal dominant genetic syndrome characterized by hamartomatous gastrointestinal polyps, mucocutaneous hyperpigmentation, and increased risk for gastrointestinal and non-gastrointestinal cancers. Its prevalence ranges between 1:8,000 to 1:200,000 births. PJS can be diagnosed clinically, and positive germline testing for STK11 gene mutation confirms the diagnosis. Notably, STK11 mutations are only detected in 50-80% of families with PJS, indicating that a second gene locus likely exists. Patients with Peutz-Jeghers syndrome require regular screening for gastrointestinal cancers with colonoscopy and upper endoscopy/video capsule endoscopy, and genetic counseling is recommended for families of patients with a germline STK11 mutation.

## 7) PROSTHETIC VALVE ENDOCARDITIS WITH PERIVALVULAR ABSCESS AND REGURGITATION IN RAOUTELLA ORNITHINOLYTICA BACTEREMIA LEADING TO HEART TRANSPLANT

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**Introduction:** Raoultella ornithinolytica is a gram-negative bacillus, previously considered related to Klebsiella oxytoca and later classified as R. ornithinolytica in 2001. Only a few clinical cases of this infection in humans have been reported, most with cholecystitis and pyelonephritis. This is the world's first reported case of R. ornithinolytica prosthetic valve endocarditis needing a heart transplant.

**Case:** A 62-year-old male presented with intermittent fevers over the last several weeks. His medical history was notable for severe calcific aortic stenosis status post surgical aortic valve replacement three months ago with a 23 mm On-x valve and chronic kidney disease stage III. His hospital course immediately after his aortic valve replacement was complicated by Raoultella Ornithinolytica urinary tract infection and sepsis, followed by six weeks of intravenous antibiotic treatment. He did well after discharge from rehab. But then began experiencing insidious onset sporadic fevers to a max temp of 101 F associated with chills and dyspnea.

His urine and 2/2 blood cultures were again positive for Raoultella ornithinolytica. Inflammatory markers were elevated with procalcitonin of 20.5 ng/mL and CRP of 16.7 mg/L. CT chest was positive for a new widening of the sternotomy defect concerning for dehiscence. A transthoracic echocardiogram showed normal prosthetic aortic valve gradient and a small echo-dense space in the mitral-aortic intervalvular fibrosa area associated with perivalvular aortic regurgitation, concerning for infective endocarditis (IE) with perivalvular abscess. The patient was urgently transferred to a higher center for further workup (including a transesophageal echocardiogram) and surgical management. He eventually underwent a successful orthoptic heart transplant for challenging to treat IE.

**Discussion:** Heart transplantation (HT) is rarely performed in patients with infective endocarditis (IE) and is considered salvage treatment in selected patients with intractable IE. Based on analyzing available case reports, the median age is usually 44 years (23-64 years), with around 84% of cases seen in males, aortic valve involvement in 64% of cases, and a median time from diagnosis of IE to HT being 75 days (range 23-840 days). Currently, a robust body of evidence is lacking to endorse HT for IE. Recently, a study based on 19 reported cases proposed general criteria to consider when evaluating such patients; this criteria suggested that with the availability of effective antibiotic therapy in the post-transplantation period, HT may be considered as a "last ditch" resort in younger patients, without significant comorbidities and persistently negative blood cultures at the time of HT, and without major embolization.

## 8) TRANSESOPHAGEAL ECHOCARDIOGRAPHY-GUIDED PERCUTANEOUS ANGIOVAC™ EXTRACTION OF TRICUSPID VALVE VEGETATION AND ICD LEAD EXTRACTION

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**Introduction:** Right-sided infective endocarditis (IE) comprises about 10% of total IE cases; tricuspid valve (TV) endocarditis constitutes about 90% of these. Intravascular and intracardiac thrombi are associated with significant morbidity and mortality. Surgery remains the gold standard treatment option; however, most of these patients have multiple comorbidities making this choice difficult. The AngioVac is a percutaneous vacuum-assisted thrombectomy device that is FDA-approved. It utilizes a venovenous extracorporeal membranous oxygenation circuit with a filter. The device removes right atrial or ileocecal thrombi, vegetations from implantable cardiac devices, and debulks tricuspid vegetations.

**Case:** A 77-year-old male with a past medical history of coronary artery disease, cardiomyopathy status post single chamber ICD placement for primary prevention, permanent atrial fibrillation on apixaban, and hypertension, presented with constitutional symptoms of weight loss, poor appetite, nausea, lethargy, and diarrhea. CT chest showed multiple scattered nodularities with cavitation in the lungs (suspicious for septic emboli). Blood cultures were positive for enterococcus fecalis. A transthoracic echocardiogram (TTE) showed a mobile, multilobular echodensity with hypoechoic areas attached to the atrial aspect of the TV, extending into the right ventricular (RV) outflow tract highly suspicious for valvular vegetation. Transesophageal echocardiogram (TEE) confirmed a very large, highly mobile echodensity attached to the TV, 3 cm x 2.1 cm, with severe TV regurgitation. The patient remained bacteremic despite aggressive antibiotic therapy tailored to antimicrobial studies and microbiologic sensitivities. Serial TTEs did not show any change in the size of the vegetation. Cardiothoracic surgery deemed the patient a poor candidate for any surgical intervention. The patient then underwent a TEE-guided successful percutaneous transcatheter removal of the vegetation with an AngioVac device. Intraprocedural TEE showed a reduction in the vegetation burden. He also underwent TEE-guided ICD lead extraction and ICD generator removal for source control.

**Discussion:** Open surgical removal is associated with a high risk of complications such as delayed recovery times, respiratory failure, and increased cost of care. The AngioVac system, combined with endovascular lead extraction, allows for a safer alternative for patients at high operative risk and a high risk for pulmonary embolization. A systematic review that synthesized reports in which the AngioVac™ percutaneous vacuum-assisted aspiration system was successfully used to debulk or remove vegetations before percutaneous lead extraction showed that percutaneous aspiration was entirely or partially successful in 97.7% of patients; the lead extraction itself was successful in 98.9% of patients; the aspiration procedure and lead extraction were done concomitantly in 92% of patients, with no complications from the aspiration procedure or procedure-related mortality.



## 9) NEUROCYSTICERCOSIS AS AN UNDERLYING CAUSE OF GENERALIZED TONIC-CLONIC SEIZURES

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**Introduction:** Neurocysticercosis, caused by the larval form of the *Taenia solium* tapeworm, is a significant etiology of acquired epilepsy globally. The variability of clinical presentations necessitates a comprehensive approach for diagnosis, which integrates clinical findings, serological data, and neuroimaging results.

**Case Presentation:** We discuss a case of a 30-year-old male, originally from neurocysticercosis-endemic Nicaragua, who presented with generalized tonic-clonic seizures. The patient had a one-year history of seizures, and due to resource limitations, he was previously only managed with an antiseizure medication, Levetiracetam, without a definitive diagnosis in his home country. However, his recent non-compliance with medication coincided with seizure recurrence. Clinical and laboratory evaluations in our facility revealed leukocytosis and decreased carbon dioxide levels, while neuroimaging showed cystic calcified lesions in the left frontal lobe with edema, indicative of neurocysticercosis. Based on these findings, the patient was started on Albendazole, an antiparasitic medication, in addition to corticosteroids to manage the inflammatory response. The patient was also advised to resume Levetiracetam for seizure control, and regular follow-ups were scheduled to monitor treatment response.

**Conclusion:** This case emphasizes the importance of considering neurocysticercosis in patients presenting with seizures, especially those from regions where the disease is endemic. It also highlights the importance of comprehensive management, incorporating both Albendazole and Levetiracetam, in improving patient outcomes. Additional investigations, such as contrast-enhanced MRI and expert consultation, are necessary for diagnosis validation and further refinement of the treatment strategy.

## 10) THE HIDDEN GIANT - A RARE CASE OF GIANT BASAL CELL CARCINOMA

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Basal cell carcinoma (BCC) is the most common skin cancer in humans with surgical modalities offering 5-year cure rates over 95% [1]. However, although exceedingly rare, infiltrative and metastatic BCCs have a very poor prognosis [2-4]. Here we present a case of a 61-year-old female with an extensive tobacco use history who presented with a chief complaint of chest pain and was subsequently found to have a giant BCC with suspected liver and bony metastatic disease.

She initially presented with supraventricular tachycardia to 220 beats per minute, elevated high-sensitivity troponins, electrocardiogram lead depressions and was diagnosed with a non-ST-elevation myocardial infarction. A 17x10 cm ulcerated lesion was found on the patient's back during cardiac computed tomography (CT) imaging which showed a mass invading the spine with critical stenosis. A tissue biopsy was positive for infiltrating BCC and wound culture grew methicillin-susceptible staphylococcus aureus. The patient intermittently sought medical care but was embarrassed by the mass and never had it evaluated, despite its continued growth for seven years.

The patient underwent radical resection, T9 vertebrectomy for infection and tumor, T8 and 10 laminectomy, biomechanical interbody device insertion at T9, T6-12 posterior instrumented fusion, allograft, spinal navigation, and placement of a 20 cm wound vac. She then returned to the operating room on postoperative day 3 for myocutaneous flap reconstruction of her mid-thoracic back wound.

A postoperative CT of the chest, abdomen, and pelvis with contrast for oncologic disease staging showed a right 7th-rib lytic lesion compatible with osseous metastatic disease and nine small hypoattenuating, indeterminant liver lesions. Magnetic resonance imaging (MRI) for further evaluation of these liver metastases was declined by the patient due to financial concerns as she was uninsured and didn't qualify for state financial assistance. Outpatient follow-up with Medical Oncology and Radiation Oncology teams following MRI was recommended, however the MRI was not performed. Too deconditioned to return home, inpatient rehabilitation with intravenous antibiotic therapy was recommended, but the patient elected to leave against medical advice. She has since had multiple readmissions for electrolyte abnormalities, failure to thrive and poor wound healing. She has yet to start medical therapy for her BCC due to this complicated post-operative course.

This case highlights the overwhelming morbidity associated with delayed diagnosis of otherwise low-risk BCC lesions, an outcome that could have been prevented with a thorough skin examination. Notably, the patient had multiple primary care visits addressing preventative health measures over the seven years her lesion was growing, but no skin examinations were performed. U.S. Preventative Services Task Force guidelines released in April 2023 state that insufficient evidence is available to recommend routine visual skin exams due to conflicting observational data [5,6]. No large-scale randomized controlled trials (RCTs) examining the effects of routine skin examinations by clinicians on morbidity and mortality for the general US population exist to date. It is imperative that well-designed RCTs be conducted to fill this void in the literature and provide guidance in preventing the severe morbidity and suffering we have observed in this tragic case.

## 11) WITNESS THE POWER OF CYBORD - A RARE CASE OF PLASMA CELL LEUKEMIA

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Plasma cell leukemia (PCL) is an exceedingly rare plasma cell dyscrasia and leukemia with dismal outcomes despite the use of aggressive chemotherapeutic regimens and advancements in autologous stem cell transplant [1,2]. Here we present a case of a 77-year-old female with a past medical history of breast cancer in remission, hypertension, hyperlipidemia, morbid obesity, and prediabetes who presented with anuria, malaise, poor oral intake, and worsening back and right leg pain.

The patient was admitted for acute renal failure (creatinine 9.52, blood urea nitrogen 107) and tumor lysis syndrome (potassium 5.3, calcium 9.4, phosphorus 7.8, lactate dehydrogenase 378, uric acid 12.1), and an expedited work-up of her leukocytosis (42,000) and cytopenias (hemoglobin 7.8, platelets 52,000). Immunofixation showed lambda monoclonal protein with an initial kappa 1.48/lambda 264 ratio of 0.01 and a bone marrow biopsy showed 90% plasma cells with CD138 positive staining.

Hemodialysis and renally-dosed induction chemotherapy with Cyclophosphamide, Bortezomib, and Dexamethasone (CyBorD) were initiated on hospital day 1. Peripheral smear showed 60-70% of leukocytes were plasma cells, and the patient was subsequently diagnosed with PCL. Fluorescence in situ hybridization studies of the bone marrow showed high-risk disease with 1q duplication, MYC gene rearrangement, monosomy 13 and CCND1/IGH fusion gene.

Due to the patient's ongoing back pain and newly diagnosed monoclonal gammopathy, an X-Ray bone survey was performed and showed skull lytic lesions, a right lesser trochanter lesion, and fractured right and left 8th ribs. The patient responded impressively well to CyBorD induction chemotherapy as evident by a sharp reduction in her lambda free light chains (Cycle 1 Day 1: 264.58, Cycle 1 Day 12: 9.91). Ultimately, the patient refused additional chemotherapy and hemodialysis on hospital day 16 and was transitioned to comfort-based cares.

PCL is the most aggressive monoclonal gammopathy, with a US reported incidence of 0.4% per 1,000,000 persons per year and 0.6% of those with multiple myeloma (MM) progressing to PCL. Diagnostic criteria require a confirmed diagnosis of MM and circulating plasma cells composing 5% WBC's on peripheral smear. PCL is classified into primary (pPCL) and secondary (sPCL). pPCL, the initial manifestation of MM, is typically associated with a lower median age of diagnosis, more extramedullary disease, and longer overall survival [3,4]. sPCL, the leukemic transformation of MM, has a higher median age of diagnosis, more bone marrow involvement, and a shorter overall survival [3,4,5].

Given the patient's age (77 years) and high bone marrow disease burden (90%), she most likely developed sPCL from an undiagnosed MM. Genetic sequencing and profiling have allowed us to identify poor prognostic molecular features in MM. However, the molecular heterogeneity of pPCL and sPCL make risk stratification challenging [2]. Recent advancements in targeted modalities, such as BiTE® antibodies, may improve outcomes for both pPCL and sPCL patients in the future, but at this time overall survival rates remain poor [6]. Ultimately, additional research into the management of PCL is strongly warranted as those with MM are living longer.”

## 12) CHAGA MUSHROOM TEA INDUCED INTERSTITIAL NEPHRITIS

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**Introduction:** Herbal products are widely available and easily obtained. One such preparation available is chaga mushroom. The reported benefits of this supplement includes reducing oxidative stress, lowering cholesterol and supporting immune function. However, these claims are not required to be validated by the Food and Drug Association (FDA) leading many people to consume these supplements believing it will improve their health. Unfortunately, these supplements can lead to significant side effects and poor health outcomes. We present a case of chaga mushroom tea induced AKI

**Summary:** A 64 years old female with history of CKD stage III due to a combination of NSAID nephropathy and hypertension nephropathy and asthma/COPD overlap syndrome was referred to Nephrology clinic for AKI on the top of CKD.

Detailed history revealed prolonged period of Chaga Mushroom tea use, which she had discontinued prior to her nephrology consultation. Despite that, renal function failed to return to baseline. However, she had an exacerbation of her asthma/COPD treated by primary care physician with a short course of prednisone. With the addition of prednisone therapy, the patient's renal function improved back to baseline. The combination of the discontinuation of a potential toxic agent as well as the use of prednisone leading to recovery of AKI and evaluation for other causes of glomerulonephritis excluded, the diagnosis of likely Interstitial nephritis was made. The patient was advised not to resume use of her chaga mushroom tea and renal function remained stable at baseline.

**Discussion:** The importance of obtaining a complete drug history , including the use of herbal supplements in the evaluation of AKI cannot be underestimated. Many patients consume herbal supplements not understanding the risks associated with their use. Many patients believe claims made to sell these supplements, however, these claims are not FDA approved. To be approved by the FDA as an authorized health claim, there must be significant scientific agreement (SSA) among qualified experts that the claim is supported by the totality of publicly available scientific evidence for a substance/disease relationship. The SSA standard is intended to be a strong standard that provides a high level of confidence in the validity of the substance/disease relationship.

**Conclusion:** Ensuring a complete history is taken can help to evaluate the potential for serious health consequences due to the use of herbal supplements.

### 13) DIABETIC KETOACIDOSIS IN NEW-ONSET TYPE 1 DIABETES DUE TO IMMUNOTHERAPY WITH PEMBROLIZUMAB

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This patient is a 64-year-old female who presented to the emergency department for shortness of breath, increased urination, and thirst for 2 days. She also endorsed weakness, blurry vision, nausea, and vomiting. Workup revealed a blood glucose of 669, anion gap of 31, and pH of 7.17 on VBG. Electrolytes, creatinine, and lactate were normal. She had no prior history of diabetes and prior fasting glucose had been normal. She had no current or recent steroid use. Approximately 2 months prior, she was evaluated for months of shortness of breath and chest CT identified a right lung mass with concern for metastatic liver lesions. Squamous cell carcinoma of lung origin was confirmed with liver biopsy. She was a poor chemotherapy candidate therefore started immunotherapy with PD-L1 inhibitor, pembrolizumab. This was followed by palliative radiation therapy of the lung. She completed 2 cycles of pembrolizumab prior to her presentation with hyperglycemia. She was admitted for diabetic ketoacidosis. Hemoglobin A1c was elevated at 8.8% and C-peptide was low at 0.1 ng/mL, although checked in the acute DKA setting. The diagnosis was confirmed with an elevated GAD-65 antibody of 2.32 nmol/L. Insulin antibodies, islet antigen 2 antibody and ZNT8 antibody were negative. Literature review states that a single positive type 1 diabetes autoantibody is 74% sensitive. She was started on an insulin drip using the institution's DKA protocol. She was transitioned to subcutaneous insulin using insulin glargine with addition of prandial insulin aspart. She noticed improvement in frequency of urination, thirst, appetite, and strength with improved blood sugar control. She was discharged with a subcutaneous insulin regimen and followed up in the endocrinology department for further management her diabetes. It was thought that she developed an immune-mediated adverse reaction secondary to pembrolizumab that resulted in autoimmune diabetes that acts as type 1. Although research is limited, a proposed mechanism is destruction of the pancreatic beta islet cells by host T-cells due to disinhibition from the PD-L1 treatment. She did receive an additional cycle of pembrolizumab after hospital discharge and planned to continue this for her cancer treatment.

## 14) SINK YOUR TEETH INTO THIS: CARDIAC TAMPONADE CAUSED BY PURULENT PERICARDITIS DUE TO ODONTOGENIC BACTERIA

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**Introduction:** Pericarditis is an uncommon cause of chest pain. Purulent pericarditis is a rare condition making up less than 1% of pericarditis cases. It is critical to recognize as it is a fatal condition if not promptly recognized and treated. More than half of the cases are found postmortem. Maintaining a wide differential and rapid re-evaluation of clinical scenarios with tools such as point of care ultrasound (POCUS) are critical when managing suspected pericarditis.

**Case Presentation:** A 61-year-old male with past medical history significant for unprovoked pulmonary embolism 18 months prior to presentation and type 2 diabetes mellitus was evaluated for chest pain. Eight days prior to presentation, he was evaluated in clinic for body aches, fatigue, subjective fever, and sore throat, and was diagnosed with Influenza A and COVID-19. On the day of presentation, he developed acute-onset chest pain with radiation to the left neck. He was transported by EMS to the emergency department. His pain improved with aspirin and sublingual nitroglycerin. His initial ECG showed diffuse ST segment elevations. He was found to have an adynamic troponin elevation to 0.04, and POCUS showed a small pericardial effusion without regional wall motion abnormalities. A diagnosis of acute post-viral pericarditis was made.

However, a few hours after admission, he developed shock. Repeat POCUS evaluation showed an enlarging pericardial effusion with tamponade physiology. He underwent emergent pericardiocentesis due to concern for obstructive shock, resulting in immediate expulsion of pus. His hemodynamics temporarily improved after placement of a pericardial drain. Unfortunately, two days after presentation, he re-developed tamponade which necessitated an emergent pericardiectomy. Ultimately, the bacterial culture from his pericardial effusion isolated *Parvimonas micra* and *Fusobacterium naviforme*, which are both known odontogenic organisms. After pericardial drain removal, he underwent complete dental extraction of his remaining teeth for extensive apical abscesses. He was discharged on ertapenem monotherapy for six weeks.

**Discussion:** This case demonstrates the importance of maintaining a comprehensive differential of pericarditis and pericardial effusion. Purulent pericardial effusions are most commonly due to *Staphylococcus* or *Streptococcus* species originating from direct extension from either the intrathoracic cavity or the myocardium or from hematogenous spread, and polymicrobial infections of dental source are rarely described. As in the case of our patient, purulent effusions are frequently heavily loculated, leading to accumulation and necessitating surgical intervention.

If untreated, this condition can be fatal most likely due to cardiac tamponade, so it is critical to have a high index of suspicion for purulent pericarditis and sequelae of rapidly enlarging effusion in a susceptible patient. It is therefore essential to continually re-evaluate these patients with tools such as POCUS.

## 15) PEMPHIGUS VULGARIS WITH EXCLUSIVE ORAL AND ESOPHAGEAL INVOLVEMENT IN AN 83-YEAR-OLD MALE PATIENT WITH A HISTORY OF FOLLICULAR LYMPHOMA: A CASE REPORT

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**Introduction:** Pemphigus vulgaris (PV) is a rare autoimmune blistering disorder primarily affecting the mucosal surfaces and skin. The epithelial lesions, seen in PV, are the result of autoantibodies that target desmoglein proteins. This process ultimately disrupts cell to cell adhesion, leading to the formation of intraepithelial bullae. PV is associated with very high morbidity and mortality and requires high clinical suspicion to appropriately diagnose and treat the condition in a timely fashion.

**Presentation:** An 82-year-old man with a medical history of hypertension, atrial fibrillation, and untreated follicular lymphoma presented with mucosal erythema, dysphagia, and reduced oral intake of approximately two-week duration. Initial evaluation suggested various possibilities, including oral thrush and hairy-cell leukoplakia, but failed to provide a definitive diagnosis. Esophagogastroduodenoscopy (EGD) revealed Esophageal Dissecans Superficialis (EDS) with severe erosive esophagitis. Biopsies were negative for fungal, malignant, and autoimmune etiologies. Due to high clinical suspicion, further investigation was pursued and pemphigus vulgaris autoantibody panel testing was consistent with the diagnosis of PV. Further, histopathological examination, of a biopsy from the oral mucosa, and direct immunofluorescence confirmed the diagnosis of PV. Following diagnosis, systemic steroids and Rituximab were initiated, without subsequent notable improvement in the clinical presentation to date. This patient remains on systemic steroid and Rituximab therapies with plans to trial adjuvant IVIG in the near future.

**Discussion:** Pemphigus vulgaris is an autoimmune bullous disease which predominantly affects the mucosal surfaces and skin, with oral involvement being the most common initial presentation. However, although rare, this case demonstrates that exclusive oral and esophageal involvement without cutaneous manifestations is possible. Clinicians should be aware of the possibility of isolated oral and esophageal pemphigus vulgaris when forming a differential diagnosis. Obtaining an accurate and timely diagnosis and thus initiating appropriate treatment is essential in the management of PV.

## 16) BEYOND THE TEXTBOOK: AN ATYPICAL PRESENTATION OF GIANT CELL ARTERITIS

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**Introduction:** Giant cell arteritis (GCA), also known as Temporal Arteritis, is the most common idiopathic systemic vasculitis of large-and medium- vessels. Most commonly, it presents with jaw claudication, headache, and scalp tenderness in patients over 50-years of age. Once suspected, treatment is focused on preventing vision loss, one of the most feared complications of GCA.

**Case:** 74-year-old male with a history of recent cerebellar lacunar stroke presented to the emergency department with recurrent episodes of transient weakness for one month. These episodes were nonspecific but described as bilateral limb heaviness in an altered state of consciousness with ability to follow commands. On ROS, he noted intermittent blurry vision and headache for one week. He was admitted one month earlier with similar symptoms when imaging revealed a cerebellar lacunar stroke. He underwent extensive work up after the first hospitalization including Zio patch and EEG which all returned negative. On ED evaluation this visit, imaging was notable for CTA neck with progressed atherosclerotic disease of the left vertebral artery. Orthostatic vitals and telemetry were normal. He was admitted for observation. On day two of hospitalization, he noted worsening bilateral blurry vision. He was evaluated urgently by ophthalmology who were concerned for an atypical presentation for GCA although noted typical ophthalmologic findings were absent. ESR and CRP were obtained which were 117 and 17, respectively. A three day course of IV methylprednisolone was initiated. Upon transitioning to oral steroids, he had complete vision loss in his left eye and transient vision loss in his right eye. Code stroke was called which revealed unchanged imaging. Pulse-dose steroids were re-initiated including up to 1600 mg IV Methylprednisolone in attempts to preserve vision in his right eye. MRI orbit was obtained which revealed enhancement of the left temporal artery and bilateral optic nerve sheaths. Temporal Artery Biopsy was completed which revealed GCA. His right eye vision stabilized and he was discharged on a prolonged prednisone taper and tocilizumab.

**Discussion:** As seen in this case, GCA can have varied clinical manifestations with subtle classic features. A high-index of suspicion is required to initiate treatment to prevent vision loss, particularly when ocular symptoms have already manifested. Typical steroid regimens include 500-1,000 mg IV Methylprednisolone daily for three days. However, higher dose regimens can be required as last-ditch efforts to prevent further vision loss; though, not without complication.



## 17) HYPERVISCOSITY SYNDROME IN A PATIENT WITH LONG-STANDING EISENMENGER'S SYNDROME

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**Introduction:** Eisenmenger's syndrome is becoming increasingly rare in the United States given the availability of surgical repair of congenital left-to right cardiac shunts. However, complications of the syndrome remain debilitating and include hypoxemic respiratory failure, arrhythmias, heart failure, and paradoxical emboli resulting in stroke. Here, we describe a patient with longstanding Eisenmenger syndrome and chronic hypoxemia, presenting with hyperviscosity syndrome due to secondary polycythemia.

**Clinical course:** A 63 year old man with Eisenmenger's syndrome secondary to atrial septal defect and complicated by right heart failure, pulmonary hypertension, and chronic hypoxemic respiratory failure presented with 2 days of tearing chest pain radiating to the back, dyspnea, and acute on chronic hypoxemic respiratory failure. Physical examination was significant for bluish discoloration of the lips, increased respiratory effort, and bilateral clubbing of the digits of the hands. He appeared euvolemic. On presentation, the patient was started on 15L oxygen via non-rebreather mask for hypoxemia into the 70s.

Initial differential diagnosis included aortic dissection, pulmonary embolism, NSTEMI, pneumonia, and worsening pulmonary hypertension versus heart failure. Evaluation was significant for hemoglobin of 26.6 (hematocrit 72%), creatinine of 1.55, and troponin and BNP elevation. Venous blood gases showed relatively normal pCO<sub>2</sub> of 44 and pH of 7.41. CT imaging was negative for acute pulmonary embolism but demonstrated severe pulmonary hypertension. ECG demonstrated T wave inversions in the inferior leads. TTE demonstrated bi-atrial enlargement, a dilated right ventricle, and left ventricular systolic dysfunction without discrete wall motion abnormalities. Respiratory pathogen panel was negative.

Given the patient's clinical symptoms and significant polycythemia, he received therapeutic phlebotomy of 200mL twice combined with 1L of crystalloid fluid with subsequent resolution of his chest pain and respiratory distress. His hemoglobin improved from 26.6 (hematocrit 72%) on admission to 22.1 (hematocrit 63%) after treatment. The patient was discharged on his home sildenafil following resolution of his chest pain and dyspnea.

**Discussion:** This case describes common complications of advanced Eisenmenger's syndrome that clinicians should be aware of when treating patients with the condition. Furthermore, it describes the presenting symptoms, evaluation, and treatment of hyperviscosity syndrome secondary to progressive pulmonary hypertension and right heart failure. Recognizing and managing these symptoms is critical for providers caring for patients with complex congenital heart disease.

## 18) A POSSIBLE ASSOCIATION BETWEEN VAPING AND CEREBRAL VENOUS SINUS THROMBOSIS

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Cerebral veins and cerebral venous sinus thromboses are blood clots that form in the sinuses and cerebral veins that drain the blood from the brain. Dural venous thrombosis is an uncommon and frequently unrecognized type of stroke. It affects approximately 5 people per million annually and accounts for 0.5% to 1% of all strokes. They can result in severe headaches, confusion, and stroke-like symptoms. Risk factors include ear, face, and neck infections, OCPs, pregnancy, surgery/trauma, or inherited thrombophilia. This report describes a case of an 18-year-old male with a history of recreational drug use that included cannabis vaping, who presented with cerebral sinus thrombosis.

An 18-year-old male was admitted to our facility after presenting with an intermittent headache for three days. The pain was described as constant and located at the back of his head with intensity ranging up to 10/10 worsening with head movement with no obvious relieving factors. He also reported some difficulties with the vision that had resolved during his evaluation and nausea and vomiting. He also had transient neck stiffness and word-finding difficulties. On presentation, patient was vitally stable, with unremarkable lab work, and otherwise unremarkable neuro exam. He underwent CT of his head that demonstrated a cerebral venous sinus thrombosis, which was confirmed with MRV. He was started on anticoagulation initially with heparin and subsequently on apixaban. Hypercoagulable workup, including factor V Leiden and prothrombin gene mutation testing, congenital thrombotic panel, lupus anticoagulant, and protein C and protein S were all negative. The patient also endorsed no family history of any thromboembolic disease. However, he did have a history of cannabis vaping, he specifically reported using “ELFER” and “ALTO.” He also had been using a supplement called “Assassin.” Hence, cannabis vaping was thought to cause this cerebral venous thrombosis without congenital or acquired thrombotic risk factors.

This case describes the potential linking of cannabis vaping with clinically significant thrombogenesis, cerebral sinus thrombosis. Given the increasing prevalence and limited regulation of e-cigarettes/vaping, this report demonstrates the importance of taking a history of vaping in the patients and educating them about the potential risks of cannabis vaping/e-cigarette use.

## 19) KIDNEY, BRAIN, LIVER, AND MUSCLE CONNECTION IN A PATIENT WITH SEVERE HYPOKALEMIA

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**Introduction:** We report a case of a patient who had severe hypokalemia. She had other clinical and laboratory abnormalities affecting multiple organ systems. In the end, we were able to tie it all together with a unifying diagnosis.

**Case Report:** A 65-year-old woman who had not seen a medical provider for a long time presented to the ER with symptoms of mild confusion and disorientation. Laboratory evaluation revealed severe hypokalemia with a serum potassium of 1.9 mmol/L. Additional labs showed low serum bicarbonate at 17 mmol/L with a normal anion gap suggesting normal anion gap metabolic acidosis. Her serum creatinine was mildly elevated at 1.36 mg/dL. She had elevated LFTs with total bilirubin of 2.2 mg/dL, AST of 80 U/L, Alkaline Phosphatase of 183 U/L. ALT was normal. Her CPK was elevated at 1469 U/L indicating mild rhabdomyolysis. She did not have a history of diarrhea. Her spot urine potassium/creatinine ratio was elevated compatible with renal potassium wasting rather than gastrointestinal loss as the cause of her profound hypokalemia. Urine anion gap was positive, suggesting impaired renal acidification from decreased ammonium excretion as the cause of her normal anion gap metabolic acidosis. Based on these findings, a diagnosis of distal renal tubular acidosis (RTA) was made. Her serum K normalized after she received aggressive oral and intravenous potassium replacement of around 300 mEq over the next 30 hours. Her mentation improved back to normal. Her CPK levels decreased over time and later normalized. During follow up in clinic, she had additional tests. Right upper quadrant ultrasound showed unremarkable liver and gallbladder. CT scan of the abdomen demonstrated non-obstructing 3 mm stone in upper pole left kidney. Serologic workup showed significantly positive ANA at a titer > 1: 2560. Anti-mitochondrial antibody was strongly positive at a titer > 150 units. This coupled with abnormal LFTs in a cholestatic pattern led to the patient being diagnosed with primary biliary cholangitis (PBC). She was placed on potassium citrate for management of her distal RTA and Ursodiol for management of her PBC. She declined a liver biopsy.

**Discussion:** PBC is an immune-mediated, chronic, cholestatic liver disease that predominantly affects middle-aged women. It is characterized by nonsuppurative destruction of small intrahepatic bile ducts, leading to fibrosis and cirrhosis. It is diagnosed based on biochemical evidence of cholestasis with elevated alkaline phosphatase levels and positive anti-mitochondrial antibody. PBC patients may have extrahepatic manifestations, and distal RTA is a known complication of PBC. Common clinical manifestations of distal RTA are non-anion gap metabolic acidosis, hypokalemia, nephrocalcinosis and kidney stones. Our patient had laboratory features of PBC and distal RTA. She had profound hypokalemia on admission. Severe hypokalemia commonly causes muscle weakness and cardiac arrhythmias. Memory impairment, disorientation, and confusion are lesser known neuropsychiatric manifestations of hypokalemia. Severe hypokalemia can also cause rhabdomyolysis which was also evident in this patient.

## 20) MEDICAL STUDENT NOTES: TRANSFORMING NOT CONFIDENT AND INEFFICIENT TO CONFIDENT AND EFFICIENT

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**Description:** Note-writing for students is an important aspect of learning how internists practice and helps learners organize their thought process in patient care. Currently, third-year medical students on our inpatient general medicine service do not use a standard, customized note template, and students either copy a note template from a resident physician or start from scratch. Both options are not ideal, as they either provide too much or too little detail and do not teach the learner how to write a unique and efficient note.

We created standardized H&P and progress note templates with embedded help text to guide daily note-writing for students. This was generated within the EHR and automatically populated for students to use. The help text guides students in standard note-writing techniques and clinical decision-making. The goals of this note were to (1) increase confidence level in organizing an assessment/plan for presentations; (2) improve efficiency in writing notes; (3) reduce unnecessary information in notes; and (4) reduce reference to other notes when writing their own notes. We provided a guide to this note template and proper note-writing techniques during their orientation to the medicine rotation.

**Evaluation:** We measured these goals with a pre-rotation and post-rotation survey sent to all medical students on inpatient general medicine services. We summarized all data as counts and frequencies. All pre- and post-comparisons were made using Fisher's exact test. The level of organizing an assessment/plan endorsed as confident increased from 17% to 83% after the intervention. Additionally, students rating their ability to write admission and progress notes as efficient or very efficient increased from 24% to 58% and 67% to 92%, respectively. Lastly, the amount of unnecessary information endorsed as <25% changed from 26% to 67% of respondents. Each of these results was statistically significant with 95% confidence intervals.

**Discussion / reflection / lessons learned:** Our pre- and post-survey data showed a significant increase in student confidence level when organizing an assessment/plan for presentations, an increase in subjective efficiency in writing notes, and a reduction in subjective unnecessary information in notes. Implementing a standardized note template for medical students is an effective teaching tool for perceived proper note writing and enhanced confidence in note organization.

Our evaluation was based on self-reported survey data. To determine whether this intervention reduces note bloat and unnecessary information, we would need to closely examine length and content before and after the intervention. Additionally, we will be expanding our project to include medical student outpatient experiences in general medicine.

## 21) CYTOREDUCTION TO PREVENT DIFFERENTIATION SYNDROME IN HIGH-RISK ACUTE PROMYELOCYTIC LEUKEMIA

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Acute promyelocytic leukemia (APL) is characterized by the t(15;17)(q22;q21) resulting in PML-RAR $\alpha$  fusion genes. While APL is highly curable with a long-term overall survival rate over 90% with all-trans retinoic acid (ATRA)-arsenic trioxide (ATO), it must be considered a hematologic emergency due to potential peritreatment mortality. While early mortality (EM), defined as death occurring within 30 days of diagnosis, reported in clinical trials is 5-10%, several population studies show EM approaching 30%. Dominant factors contributing to high observed mortality are disseminated intravascular coagulopathy (DIC) and differentiation syndrome (DS) during induction therapy. DS is a potentially fatal cytokine release syndrome that can occur with ATRA-ATO, and risk is determined by several factors including total leukocyte and blast count at presentation, age, and underlying organ dysfunction. Here we describe management of a patient with APL presenting with a very high leukocyte count and coagulopathy.

A 25-year-old female with no known significant medical conditions presented with two weeks of vaginal bleeding, generalized body aches, chills, and fever. Blood counts were significant for WBC count 74 K/uL with 9% blasts, platelet count 25 k/uL, and hemoglobin 5.4g/dL. Peripheral smear showed leukocytosis with numerous blasts and occasional Auer rods concerning for APL. Diagnosis of APL with PML-RAR $\alpha$  fusion was confirmed by fluorescence in situ hybridization (FISH) with bone marrow biopsy. Fibrinogen was 127mg/dL and INR 1.6 which confirmed clinical DIC. Initial management involved cryoprecipitate and platelet transfusions with close monitoring for bleeding. Due to high presenting WBC and concern for DS, cytoreduction with hydroxyurea and IV cytarabine was initiated and immediately followed by Gemtuzumab-Ozagomycin with ATRA-ATO induction therapy in a sequential manner. Pre-emptive dexamethasone was given for additional prevention of DS. The patient experienced mild transient hypoxia that resolved with supportive care. Vaginal bleeding resolved and fatigue improved with treatment during hospitalization. The remaining course of induction was unremarkable for any complications related to bleeding or severe DS, and she was discharged for outpatient management.

High-risk APL is a hematologic emergency. While leukocytosis > 10k/uL is considered high risk, it is uncommon to encounter an APL with a very high WBC count, as seen in our patient, and can be associated with a greater risk of relapse and treatment related morbidity. Though initiation of ATRA-ATO with any suspicion of APL and coagulopathy correction is strongly recommended as the first step, the importance of anticipating and recognizing impending DS is also paramount. Pre-emptive measures such as aggressive cytoreductive therapy, sequential addition of ATRA-ATO with necessary dose titrations, and steroids are essential to reduce EM. Our case highlights the nuances of risk stratification and need for vigilant monitoring upon diagnosis and initiating chemotherapy.

## 22) ACUTE MONOCULAR BLINDNESS - AN UNUSUAL PRESENTATION OF RELAPSED MULTIPLE MYELOMA

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**Introduction:** Multiple myeloma is a plasma cell dyscrasia characterized by clonal plasma cell proliferation and associated end-organ damage such as hypercalcemia, anemia, renal failure and bone lesions in addition to M protein in the serum, urine or bone marrow clonal plasma cells (typically >10% of cell population). Multiple myeloma can have sites of extramedullary disease in sites such as the skin, lymph nodes, central nervous system, bone and liver. Central nervous system (CNS) involvement in multiple myeloma is clinically rare but is associated with a very poor prognosis.

**Case Presentation:** A 70-year-old male with a history notable for ST-elevation myocardial infarction, left ventricle diastolic dysfunction, chronic kidney disease, hypertension, dyslipidemia, multiple myeloma (IgA/kappa diagnosed 3 years prior status post chemotherapy with bortezomib, cyclophosphamide/bortezomib/dexamethasone (CyBORD), lenalidomide/ bortezomib/dexamethasone (RVD), now on maintenance with lenalidomide presented with 1 week of blurry vision in the right eye. He also noted bilateral epiphora and a pinprick sensation on his forehead. Extensive review of systems and history were otherwise unremarkable. He developed severe right eye pain during admission. Ophthalmologic exam showed 2+ disc edema of the right eye. Physical exam demonstrated conjunctival injection and tearing of the right eye and livedo reticularis on his legs. On neurological exam, patient was unable to count fingers with his right eye or perceive light. There was a notable relative afferent pupillary defect and adductor muscle deficit of the right eye. MR imaging of the brain showed multiple supratentorial white matter lesions as well as enhancement of the right optic nerve sheath suggestive of optic perineuritis. Lumbar puncture showed an elevated white blood cell count with a lymphocyte predominance. Cerebrospinal fluid cytology demonstrated a population of cytologically atypical plasma cells with nuclear anisocytosis and occasional nucleoli. Flow cytometry demonstrated kappa light chain-restricted plasma cells with abnormal immunophenotype. Overall, the findings were diagnostic of plasma cell neoplasm, consistent with CNS involvement of relapsed multiple myeloma. His eye pain temporarily resolved with steroid administration; however, he had no improvement in vision and pain quickly returned. He pursued additional chemotherapy which included intrathecal administration. Unfortunately, due to symptom burden he chose to pursue hospice care.

**Discussion:** Here we present a case of a patient with a notable history of vascular disease and multiple myeloma who presented with monocular blindness, developed significant ocular pain and was found to have optic perineuritis in the setting of multiple myeloma relapse with CNS involvement. The differential should be approached broadly for patients presenting with acute monocular blindness. Key findings in the history may help to differentiate for the most likely etiology. Monocular blindness indicates a pathology proximal to the optic chiasm, suggesting an ocular, orbital, optic nerve, retinal or vascular cause. Evaluation of monocular blindness benefits from a team-based approach with consideration for neurology and ophthalmology involvement.

## 23) DANGERS OF BEING THICK-SKINNED

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**Introduction:** Acute kidney injury (AKI) in most patients is associated with a transient, usually reversible decline in kidney function. However, in certain cases of AKI, it is important to promptly identify the cause of kidney injury and institute appropriate management. Failure to do so can result in devastating consequences, including rapid progression to end-stage renal disease (ESRD). Here we report the case of one such patient.

**Case Report:** A 56-year-old female with profound intellectual disability (non-verbal) and hypothyroidism presented from her intermediate care facility with a 3-day history of decreased oral intake, vomiting, lethargy, and decreased urine output. She was noted to be severely hypertensive with systolic pressures in the 220s-230s mmHg and diastolic pressures in the 110s mmHg. Her serum creatinine was elevated at 5.6 mg/dL. Other labs were notable for severe normocytic anemia with a hemoglobin of 7.4 g/dL. Her baseline creatinine and hemoglobin were 0.92 mg/dL and 12.1 g/dL, respectively, at an annual visit three months prior to presentation. White blood cell count and platelet count were within normal limits. Absolute reticulocyte count and LDH were elevated at 329 thousand cells/L and 992 U/L, respectively, and haptoglobin was undetectable. Coombs testing was negative. Peripheral blood smear notable for schistocytosis. Work-up was consistent with microangiopathic hemolytic anemia. Urinalysis showed albuminuria and microscopic hematuria. Renal artery doppler was negative for renal artery stenosis. She was initially treated with nicardipine infusion for management of her severe hypertension. On exam, she was noted to have diffuse skin thickening affecting the upper and lower extremities and face. She was diagnosed with diffuse systemic sclerosis and was suspected to have scleroderma renal crisis. She was treated with IV enalapril pending serologic work-up. Subsequent labs demonstrated positive ANA and RNA polymerase III antibody, thereby confirming the clinical suspicion. She had progressively worsening kidney injury and was placed on hemodialysis. Hemolysis resolved with aggressive blood pressure management using a combination of drugs including angiotensin converting enzyme inhibitors (ACE-I). Unfortunately, kidney function never recovered, and she continued to be dialysis dependent.

**Discussion:** This case highlights a patient with previously undiagnosed systemic sclerosis who presented with scleroderma renal crisis (SRC). This is a potentially life-threatening complication in patients with systemic sclerosis, most commonly seen in diffuse systemic sclerosis. It is characterized by abrupt onset of marked hypertension and acute kidney injury with microangiopathic hemolytic anemia. Autoantibodies directed against RNA polymerase III are associated with a higher risk of SRC. Kidney biopsy in patients with SRC will show evidence of thrombotic microangiopathy with onion skin concentric hypertrophy of arcuate and interlobular arteries. The ischemic injury results in activation of the renin-angiotensin system, leading to severe hypertension. Patients with diffuse cutaneous systemic sclerosis must be closely monitored for early detection of SRC, as treatment is more likely to be effective when initiated early, before irreversible kidney injury has occurred. Treatment of a patient with established SRC is supportive, with ACE-I as the first line medication for the anti-hypertensive regimen.”

## 24) HODGKIN LYMPHOMA MANIFESTING WITH SPINAL CORD COMPRESSION

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**Introduction:** Hodgkin lymphoma (HL) is a type of hematologic malignancy characterized by cancerous Reed-Sternberg cells with an inflammatory background. It presents in a bimodal age distribution, and the majority of patients go into long-term remission with curative intent combination chemotherapy. The most common sites of disease presentation include mediastinum or neck lymph nodes, although HL may present in other sites. Extranodal CNS involvement with HL is rare, and spinal cord compression secondary to HL is exceedingly uncommon. When HL presents with SCC, it is often a marker of advanced disease.

**Case:** A 72-year-old male with chronic lymphocytic leukemia without prior treatment presented for truncal ataxia with negative stroke work-up. CT cervical spine from stroke evaluation was notable for T3-T5 paraspinal mass. Subsequent imaging with MRI cervical and thoracic spine revealed three paravertebral/vertebral soft tissue masses within the thoracic spine with severe canal narrowing at T3-T4, severe left foraminal narrowing at T7-T8 and T8-T9, and bilateral severe narrowing at T11-T12. The patient was noted to have new bilateral lower extremity weakness, loss of rectal tone, and urinary retention with concern for spinal cord compression. He was started on steroids and radiation with the decision to defer neurosurgical intervention. Three days later the patient developed acute, progressive bilateral lower extremity weakness and was taken for emergent T3-T6 laminectomy. Pathology returned as classical Hodgkin lymphoma. After recovery from surgery, he started on brentuximab vedotin-AVD (doxorubicin, vinblastine, and dacarbazine).

**Discussion:** Spinal cord compression (SCC) from Hodgkin lymphoma is exceedingly rare and is an oncologic emergency. It is important to keep HL in the differential of epidural masses. Surgical biopsy may be required to make the diagnosis, and patients often require a multidisciplinary approach with neurosurgery, radiation oncology, and medical oncology. Prompt recognition and treatment are imperative to preserve neurologic function.



## 25) AN ATYPICAL CAUSE OF CHEST PAIN: A CASE REPORT OF THYMIC CARCINOID TUMOR

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**Introduction:** Neuroendocrine tumors of the thymus, otherwise known as thymic carcinoid tumors, are exceedingly rare neoplasms that account for 0.4% of all carcinoid tumors in the body. These tumors are the rarest subset of thymic malignancies, constituting approximately 5% of all tumors of the thymus. They typically arise in the anterior mediastinum, and unlike neuroendocrine tumors found elsewhere in the body, exhibit aggressive biologic behavior. They are malignant in more than 80% of cases with a high rate of local recurrence. Risk factors for thymic carcinoid tumors include male sex (3:1 male to female ratio), tobacco use, and multiple endocrine neoplasia type 1 (MEN1) syndrome. Approximately 400 cases of thymic carcinoid tumors have been reported in the literature; therefore, prognostic factors and treatment regimens remain inconclusive.

**Case Description:** This case involves a 74-year-old male patient with a history of thymic carcinoid surgically removed seven years prior who presented with complaints of chest pain that started the day prior. The chest pain woke him from sleep and was described as a knife-like-sensation in the right chest that radiated to his right arm. The pain was constant with worsening severity. He denied ever having pain like this in the past and had no recent illnesses, sick contacts, or trauma. He was hypertensive on arrival with a blood pressure of 204/98. His initial high-sensitivity troponins were 179 ng/L and 170 ng/L on repeat two hours later, with an EKG that showed no ischemic changes. His exam was significant for anterior chest pain that was reproducible on palpation of his chest wall. An initial chest X-ray showed no acute pulmonary process, but a follow-up CT pulmonary angiogram demonstrated a 2.9 x 3.9 cm soft tissue mass adjacent to the right aspect of the sternum and extending into the chest wall anteriorly. He was admitted to the hospital for pain and blood pressure control and underwent biopsy of the mass which revealed poorly differentiated thymic tissue with positive immunohistochemistry confirming neuroendocrine differentiation.

**Discussion:** This case of thymic carcinoid is notable for its presentation of acute onset chest pain. While most anterior mediastinal malignancies present with symptoms related to local mass effect, it is rare to have acute onset of symptoms over the course of a day with this degree of severity. Initial concern for acute coronary syndrome, hypertensive emergency, and pulmonary embolism prompted further imaging and eventual biopsy, which was key in establishing the diagnosis. This patient was male and had a 30-pack-year smoking history, placing him at higher risk for thymic carcinoid based on known risk factors. This finding also represented recurrence of his prior cancer, demonstrating the aggressiveness of thymic carcinoid tumors and challenges of treatment. Due to the limited number of reported cases, further research into thymic neuroendocrine tumors is necessary to better identify risk factors, presenting symptoms, treatment options, and prognosis.

## 26) PANCREATIC INTRAEPITHELIAL NEOPLASIA IN HETEROTOPIC PANCREATIC TISSUE MANAGED WITH ENDOSCOPIC FULL-THICKNESS RESECTION: A RARE OCCURRENCE AND A NOVEL MANAGEMENT APPROACH

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**Introduction:** Heterotopic pancreatic tissue (AKA pancreatic rest) is a common benign anomaly, and malignant transformation is rare. We present a case of gastric antral pancreatic rest discovered during an Esophagogastroduodenoscopy (EGD) managed by surveillance. We highlight the role of Endoscopic Full-Thickness Resection (EFTR) as a diagnostic and therapeutic modality for submucosal enteral lesions.

**Case Description:** A 61-year-old female underwent EGD in 2004, revealing a 2.6cm intraluminal submucosal mass in the gastric antrum. Biopsies suggested pancreatic rest, and surveillance was recommended. After 8 years, the patient opted for EFTR. The procedure was successful, with no complications. Histology showed curative resection of low-grade pancreatic intraepithelial neoplasia (PanIN).

**Discussion:** Pancreatic Heterotopia (PH) is commonly found incidentally and is usually managed by surveillance. However, the risk of malignancy, although rare, exists. Our case emphasizes the neoplastic potential of pancreatic rests. EFTR offers a less invasive alternative to surgical interventions, allowing for complete removal and definitive diagnosis. It has a low-risk profile, shorter procedure time, and potential curative resections. Surveillance coupled with deep needed biopsies is the standard of care, but our case highlights the clinical significance of early intervention with EFTR for asymptomatic pancreatic rests. EFTR eliminates the need for further surveillance and can effectively resolve the patient's condition. Further studies are needed to determine the optimal management strategy for submucosal masses and evaluate the long-term benefits of EFTR.

**Conclusion:** Our case demonstrates the potential malignant risks associated with benign lesions like pancreatic rests and highlights the utility of EFTR as a definitive management option. We propose considering EFTR for low-risk gastric lesions, irrespective of malignant potential. EFTR allows for complete removal, definitive diagnosis, and potentially avoids the need for further surveillance. A reassessment of current guidelines is necessary to incorporate advancements in endoscopic approaches and devices, improving patient safety and outcomes.

## 27) CLOTS AND CARDIOMYOPATHY: RARE COMPLICATIONS OF HYPEREOSINOPHILIC MYELOPROLIFERATIVE DISEASE

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Hypereosinophilic cardiomyopathy is a rare and highly morbid complication of myeloproliferative neoplasms and Hypereosinophilic Syndrome (HES). High-intensity steroid therapy can be effective in treating hypereosinophilic cardiomyopathy, though delayed symptom onset until late in disease progression frequently results in high-acuity cases.

A 70 year old Caucasian male with recently-diagnosed systemic mastocytosis and chronic myelomonocytic leukemia (CMML) was admitted to the Hematology service with several weeks of abdominal pain, jaundice, and night sweats due to concern for infiltrating mast cell hepatopathy and worsening hypereosinophilia. He also reported chronic dull chest pain and chronic, indolent lower extremity edema without prior history of cardiac disease. On presentation, the patient was afebrile, and his vital signs were within normal limits. The physical examination revealed jaundice, scleral icterus, pericardial friction rub, abdominal distention and tenderness to palpation, and bilateral lower extremity pitting edema. Laboratory evaluation was notable for mixed hyperbilirubinemia (direct and total bilirubin 5.8 mg/dL, 8.1 mg/dL respectively), hypereosinophilia to 12,430/uL (reference range 0-500), thrombocytopenia (12,000/uL), and elevated troponin (0.84 ng/mL). Electrocardiogram showed new diffuse ST segment depression. A transthoracic echocardiogram revealed large non-mobile echodensities in the right ventricular outflow tract and apical left ventricle. Subsequent cardiac MRI demonstrated global hypokinesis without regional wall motion abnormality (left ventricular ejection fraction 46.6%), diffuse subendocardial late gadolinium enhancement of nearly all segments of left and right ventricles, and biventricular apical thrombi consistent with hypereosinophilic cardiomyopathy. TTE and MRI findings led to initiation of high-dose intravenous steroids (1 mg/kg prednisone daily), which significantly improved hypereosinophilia; eosinophils were undetectable forty-eight hours after initiation of therapy. Anticoagulation was contraindicated due to significant thrombocytopenia. 24 hours later, the patient developed hypotension and was intubated for acute hypoxic respiratory failure with combined cardiogenic and septic shock in absence of significant changes on a repeat transthoracic echocardiogram. The patient's family chose to pursue end-of-life care in the setting of progressive multiorgan failure, and the patient died shortly after.

This case describes hypereosinophilic myopericarditis complicated by biventricular thrombi and cardiogenic shock in a patient with myeloproliferative disease. The outcome of this case is in stark contrast to successfully-treated hypereosinophilic cardiomyopathies in patients without underlying HES. Patients with known HES may benefit from outpatient cardiac screening given the high morbidity and mortality of eosinophilic cardiomyopathy in this patient population. Several studies have demonstrated a link between coronary disease and conditions such as mastocytosis and CMML, and cardiac MRI has been shown to detect all stages of eosinophilic myocyte damage. Due to the rare and unpredictable nature of eosinophilic cardiomyopathy in patients with underlying HES, presentation is often delayed until late in the disease course leading to high morbidity and mortality. This case demonstrates the need for further elucidation of pathophysiologic mechanisms, the utility of multimodal cardiac imaging in diagnosis, and the importance of early diagnosis and treatment initiation in avoiding life-threatening complications of hypereosinophilic cardiomyopathy.

## 28) SYNCOPE, SARCOIDOSIS, AND STRUCTURAL CAUSES OF VENTRICULAR TACHYCARDIA: A CASE REPORT

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This case describes an early middle-aged male patient without known cardiac disease presenting with new-onset syncope in the setting of ventricular tachycardia, and illustrates a multi-pronged approach to the evaluation of VT syncope and identification of the underlying etiology.

A 48-year old Caucasian man without past medical history presented to the emergency department following an index episode of syncope preceded by lightheadedness, dyspnea, diaphoresis, and palpitations without chest pain that started while he was eating dinner. The patient reported a single episode of similar pre-syncopal symptoms while chainsawing one week prior, and denied recent illnesses. On presentation to the emergency department, the patient was found to be in normotensive monomorphic ventricular tachycardia at a rate of 227 beats per minute and underwent successful DCCV. Post-cardioversion ECG demonstrated ST elevations in AVR and V1 with precordial depressions in the setting of troponin level of 2.34 ng/dL (ULN < 0.03 ng/dL). COVID PCR was negative on admission. Coronary angiography demonstrated normal coronary anatomy in a right-dominant system without obstructive coronary artery disease. Transthoracic echocardiogram demonstrated LVEF of 45% with mild diffuse hypokinesis. Cardiac MRI demonstrated delayed gadolinium enhancement of anteroseptal and inferior subepicardial regions consistent with myocarditis or non-ischemic cardiomyopathy. Cardiac PET imaging demonstrated extensive biventricular patchy uptake and numerous prominent, FDG-avid thoracic lymph nodes consistent with cardiac and extracardiac sarcoidosis. Bronchoscopic thoracic lymph node biopsy demonstrated granulomatous inflammation consistent with extracardiac sarcoidosis. The patient was started on sotalol 120mg twice-daily, and underwent successful dual-chamber ICD placement prior to discharge. The patient established care with Electrophysiology, Advanced Heart Failure, and Rheumatology as an outpatient. He is currently asymptomatic and performing his daily activities without difficulty on sotalol and an immunosuppressive regimen of mycophenolate mofetil with prolonged prednisone taper.

This report describes a case of VT syncope in a relatively young patient with newly-diagnosed cardiac sarcoidosis. Structural and arrhythmogenic etiologies of cardiac syncope should be considered in younger patients without known heart disease. Symptomatic tachyarrhythmia is a common presenting symptom of cardiac sarcoidosis, and should raise suspicion for underlying structural disease in an otherwise healthy patient. Finally, cardiac sarcoidosis is a progressive disease with poor prognosis, and outcomes are best when diagnosed and managed early in the disease course via a multidisciplinary approach.

## 29) EOSINOPHILIA SECONDARY TO HELMINTH INFECTION LEADING TO SYMPTOMATIC CARDIAC TISSUE DAMAGE IN A YOUNG ADULT

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**Introduction:** Parasitic infections, such as helminthic infestations or tropical diseases, have been linked to eosinophiliamediated cardiac complications in some individuals. The infiltration of eosinophils into the myocardium can lead to cardiac tissue damage and subsequent cardiomyopathy. We present a case of a *Strongyloides* infection diagnosed by serology associated with eosinophilia, and symptomatic myocarditis.

**Case:** a 28-year-old male with no significant past medical history presenting with sudden onset chest pain during snow shoveling and found to have PE. On presentation, he was found to have a temp of 101.7, HR 109, and BP 117/80. Workup was notable for WBC of 16 (Abs Eosinophils >3000), trop of 8.12, BNP of 602, and CTA that showed multifocal segmental and subsegmental PE and associated pulmonary infarction with minimal RV strain. Cardiac MRI performed was suggestive of myocarditis. *Strongyloides* IgG Ab positive at 1.2. The patient was given a two-day course of ivermectin. On follow up, symptoms had resolved, and eosinophil count had normalized.

**Discussion:** Clinical manifestations of eosinophilia-induced cardiac involvement in young adults often include chest pain and cardiac dysfunction. Chest pain, as seen in this patient, can range from mild discomfort to severe, angina-like symptoms. Cardiomyopathy, characterized by structural and functional abnormalities of the heart muscle, can manifest as heart failure, arrhythmias, or even sudden cardiac death. Diagnosis of eosinophil-induced cardiomyopathy and associated complications typically involves a comprehensive evaluation. This may include assessing peripheral smears, serologic testing for specific parasitic infections, cardiac imaging techniques (echocardiography, cardiac MRI), and even endomyocardial biopsy to confirm eosinophilic infiltration within the myocardium. Management of eosinophilia-related cardiomyopathy and associated symptoms involves a multidisciplinary approach. Antiparasitic treatment, if applicable, is essential to eliminate the underlying infection. Immunosuppressive therapy, such as corticosteroids, may be employed to reduce eosinophilic inflammation and prevent further cardiac damage. In severe cases, advanced heart failure management, arrhythmia control, and close monitoring for potential complications are necessary. Further research is required to elucidate the underlying mechanisms and determine optimal treatment strategies for eosinophilia-induced cardiomyopathy and associated cardiac events in young adults. Improved understanding of the pathophysiology will enable early identification, appropriate management, and better outcomes for affected individuals. Keywords: eosinophilia, parasitic infections, cardiomyopathy, chest pain, NSTEMI, young adults.

### 30) PARANEOPLASTIC SYNDROME OF INAPPROPRIATE ANTIDIURETIC HORMONE: A CASE OF METASTATIC SMALL CELL LUNG CANCER

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**Introduction:** Lung cancer is a leading cause of cancer and cancer-related mortality worldwide. Small cell lung cancer (SCLC) accounts for ~15% of all lung cancer. Small cell lung cancer is associated with a variety of paraneoplastic conditions including syndrome of inappropriate antidiuretic hormone (SIADH), and it is associated with poorer outcomes for patients with SCLC.

**Case:** A 61-year-old male with COPD, recent Covid-19 infection, tobacco use disorder, and GERD presented with a week of fatigue, subjective cognitive difficulties, and 30-pound unintentional weight loss over the last 6 months. On physical examination, he was found to be thin, euvoletic, and had clear lung sounds. Labs on presentation were notable for serum Na 117 mmol/L, serum Cl 87 mmol/L, Serum osmolality 245 mOsm/kg, urine osmolality 385 mOsm/kg, and urine sodium 111 mmol/L. Values were consistent with SIADH. He was started on 1.8% NaCl and placed on 1.5L daily fluid restriction. Chart review revealed a chest x-ray from 5 weeks prior to admission that demonstrated left upper lobe volume loss and left hilar prominence and were thought to be due to Covid infection at that time. CT chest showed obstructive left upper lobe collapse from endobronchial lesion. Biopsy of endobronchial lesion demonstrated small cell carcinoma. A staging MRI brain was obtained which showed no evidence of metastasis to brain. The patient's hospital course remained uncomplicated, and he responded well to hypertonic saline and fluid restriction with gradual improvement of hyponatremia and return to normal range. The patient was discharged home with a 1.5L fluid restriction. PET-CT soon after discharge revealed diffusely metastatic disease to the liver, hilar lymph nodes, and multiple vertebrae and ribs. The patient is currently undergoing platinum-based chemotherapy.

**Discussion:** Etiology of SIADH is a wide-ranging differential. Patients presenting with hyponatremia secondary to SIADH often improved clinically without finding the underlying cause. Paraneoplastic conditions often require a high index of suspicion. SIADH is reported in 7-16% of small cell lung cancers, so patients with risk factors for SCLC like smoking or those presenting with cough, dyspnea, and weight loss presenting with hyponatremia consistent with SIADH should have SCLC as a possible etiology evaluated. Treatment for paraneoplastic SIADH due to SCLC includes fluid restriction, salt supplementation, and ultimately reduction in tumor burden with chemotherapy.

### 31) A RARE CASE OF SARCOMA PRESENTING WITH A PATHOLOGIC L3 FRACTURE

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**Introduction:** Soft tissue sarcomas are rare adult malignancies, accounting for less than 1% of all adult malignant tumors. They typically manifest as painless enlarging masses, often arising de novo from benign lesions. Pain may develop later if surrounding structures are compressed, leading to patient presentation. Most soft tissue sarcomas (50%) occur in the thigh, buttock, or groin with the lungs being the most common site of distant metastasis at diagnosis followed by osseous metastasis as the second most common. Biopsy of the primary lesion is the gold standard for diagnosis, followed by imaging for evaluation of metastatic disease. Treatment involves excision of the primary tumor along with adjuvant chemotherapy. Recurrence is common, affecting up to 25% of patients after successful treatment which necessitates diligent follow up.

**Case:** This report presents a 62-year-old female who presented with acute on chronic low back pain with new radiculopathy. CT scan revealed degenerative changes and a L3 compression fracture, along with small osseous lesions suggestive of myeloma or metastatic disease. Further investigation failed to identify a primary lesion, and a bone marrow biopsy eventually revealed extensive involvement by an undifferentiated pleomorphic tumor. A diagnosis of sarcoma was reached by exclusion after ruling out other possible etiologies with extensive immunohistochemical staining. The patient began doxorubicin therapy, and further characterization of the biopsy is underway.

**Discussion:** Soft tissue sarcomas are unusual adult malignancies, often presenting with a painless enlarging mass. Diagnosis is established via biopsy of the primary lesion. Metastasis can occur, with the lungs being the most common site, followed by bone. Prompt diagnosis and treatment through excision, chemotherapy and radiotherapy is crucial for prognosis. Recurrence is common which highlights the need for follow up. This report underscores the need to consider sarcoma in patients with atypical symptoms and progressive osseous lesions.

## 32) TRUE HYPONATREMIA CAUSED BY INTRAVENOUS IMMUNOGLOBIN

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**Introduction:** Intravenous Immune Globulin (IVIG) is commonly used for neuroimmunologic and autoimmune conditions. We present a rare case of true hyponatremia in a patient being treated for Acute Inflammatory Demyelinating Polyradiculoneuropathy (AIDP).

**Case presentation:** A 70-year-old male presented to the ED with gradually progressive pain and weakness in the left lower extremity for a week and weakness in the right lower extremity for one day. His exam revealed reduced strength in the left lower extremity and decreased sensations bilaterally. Infectious and metabolic labs on admission were all normal. Extensive imaging, including an MRI brain and whole spine, failed to reveal any clear etiology. A lumbar puncture showed high protein but was negative for viral and fungal infections. So an EMG was performed, which showed mixed sensorimotor peripheral neuropathy, supporting a diagnosis of AIDP. He was started on IVIG at 0.4 grams per kilogram, and his neurologic symptoms began to improve within 24 hours. No further labs were performed until day 4, when he was found to have sodium of 121 with a serum osmolality of 266 mOsm per liter, confirming true hyponatremia. Clinically he was euvolemic, had a good appetite, and no recorded evidence of excessive free water consumption. Additional lab work revealed a urine osmolality of 291 mOsm per liter, urine sodium of 11 mmol per liter, normal thyroid function, and cortisol levels. Due to significant improvement in his neurologic function, a decision was made to delay his last dose of IVIG and monitor his sodium levels sequentially. Over the next 48 hours, his sodium gradually improved, and he received his last dose of IVIG. After discharge, follow-up sodium levels were 133 after two days and 134 after a week.

**Discussion:** Hyponatremia is a rare but well-known complication in AIDP and is often multifactorial. It can be related to SIADH and can also be due to IVIG, which causes Pseudohyponatremia, both of which have been well-reported in the literature. This unique case highlights that IVIG can induce true hyponatremia, which is postulated to be most likely secondary to sucrose-induced translocation of water across cell membranes. Closely monitoring sodium levels while receiving IVG should also be employed as part of IVIG-related treatment protocols for early detection of hyponatremia and prevention of adverse outcomes.



### 33) BEWARE OF THE KILLER SOIL

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**Introduction:** Blastomycosis is an infection caused by *Blastomyces dermatitidis*, a fungus endemic to the Ohio and Mississippi River Valleys, Great Lakes Region and Southeastern United States. It most commonly presents as pulmonary infection but extrapulmonary manifestations can occur in 25-30% of patients and have varying degrees of clinical severity.

**Case Description:** A 75-year-old male with past medical history significant for OSA, CAD, AAA, basal cell carcinoma, and HTN was admitted to the medical ICU after presenting with 3 months of worsening dyspnea. He was evaluated outpatient when symptoms began with a CT scan that demonstrated a new right-sided lung mass, with repeat imaging showing increase in the size of the mass and new masses throughout both lungs. Repeat imaging done a month later demonstrated a new abdominal wall mass and splenic lesions. He had been treated with various antibiotics including amoxicillin, azithromycin, cefpodoxime, and Bactrim for a presumed bacterial infection but continued to have dry cough, intermittent fevers and progressively worsening dyspnea. Patient also reported non-painful skin lesions on both legs that were draining serous fluid. Social history was notable for considerable outdoor exposure with gardening, but no significant travel outside of Wisconsin. Initial labs on presentation were notable for leukocytosis (31.3), lactic acidosis (3.0), and negative COVID, influenza and RSV testing. Admission CTA chest, abdomen and pelvis demonstrated rapidly progressive ARDS, right para-mediastinal lung mass, sclerotic lesions involving the right clavicle and T5 vertebral body, and multiple hypoattenuating splenic lesions. Given CT findings and rapid progression of pulmonary nodules, there was highest concern for infectious etiology. Non-invasive infectious workup including beta 1,3-glucan, galactomannan, Histoplasmosis, *Blastomyces*, AFB smears, and sputum cultures were sent. He was started on Amphotericin B, Zosyn and Vancomycin. He was initially requiring high-flow nasal cannula, but respiratory failure ultimately worsened necessitating intubation. Fungal cultures ultimately grew *Blastomyces*, and patient was continued on Amphotericin B. He then developed an acute kidney injury as a consequence of amphotericin therapy and was eventually initiated on VV-ECMO. He also developed a super-imposed *Pseudomonas aeruginosa* bacterial pneumonia requiring treatment with Meropenem. Patient was evaluated for debridement of his large ventral wall mass, which was suspected to be fungal growth, but was ultimately determined to be a poor surgical candidate. Despite aggressive therapies, the patient remained in multi-system organ failure and distributive shock. His wife elected to proceed with comfort-focused cares and he passed shortly after being extubated. His cause of death was determined to be multi-system organ failure as a consequence of disseminated blastomycosis.

**Discussion:** Blastomycosis is a rare fungal infection acquired from breathing in the spores from soil or other organic material. It most commonly presents as an isolated pulmonary infection, though disseminated disease can occur in 25-30% of patients. Disseminated disease often carries a high mortality rate, particularly when associated with ARDS or in immunocompromised patients. This patient was misdiagnosed for a prolonged period, and he may have had a more favorable outcome if testing and appropriate treatment was initiated earlier in his clinical course

### 34) USING ETOMIDATE IN HYPERCORTISOLISM SECONDARY TO ADRENAL CARCINOMA

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**Background:** Etomidate inhibits 11 $\beta$ -Hydroxylase to treat severe hypercortisolism.

**Case Description:** 40-year-old woman with metastatic adrenal carcinoma on C1 of doxorubicin/cisplatin/etoposide, mucinous cystic neoplasm of pancreatic tail s/p distal pancreatectomy w/ splenectomy in 2006, HTN, DM II, and GERD presented to clinic with fatigue, low mood, and diffuse progressive weakness over the previous 2 weeks. Her vital signs were unremarkable. On exam, she had visible facial fullness, supraclavicular fat pads, and striae over her abdomen, arms, chest, and upper back. Neurological exam revealed 4/5 strength in her upper and lower extremities bilaterally. Labs were notable for a potassium of 2.3, bicarbonate of 34 and CBC at baseline. She was advised to present to the Emergency Department for her electrolyte abnormalities and symptoms, where she was admitted to the general medicine service. Given her known adrenal carcinoma, an AM cortisol was obtained and was elevated to 177. Inpatient Endocrinology was consulted, who recommended increasing her home osilodrostat, an 11 $\beta$ -Hydroxylase inhibitor. However, given the severity of her hypercortisolism, it was recommended that she be admitted to the ICU, where she be started on an etomidate infusion. Etomidate also works by inhibiting 11 $\beta$ -Hydroxylase in the cortisol synthesis pathway and works to a much more rapid degree than osilodrostat. Her cortisol levels were monitored every 6 hours, and her etomidate was titrated accordingly. After a few days on the etomidate infusion, her cortisol levels reached the desired 10-20 mcg/dL range, and she was discharged home. However, she returned to the hospital a few weeks later where she was treated for pneumonia. Eventually, she significantly declined clinically, and was transitioned to comfort measures, passing away surrounded by family.

**Conclusions:** This case illustrates the clinical manifestations of adrenal carcinoma and hypercortisolism, while also highlighting the utility of etomidate as an effective 11 $\beta$ -Hydroxylase inhibitor in cases of severe hypercortisolism.

### **35) NEUROTOXOCARIASIS: UNVEILING NEURITIS AND A SPACE-OCCUPYING BRAINSTEM LESION ORIGINATING FROM PARASITIC NEMATODE INFECTION**

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Toxocariasis, a helminthic infection caused by *Toxocara*, predominantly affects populations in tropical and subtropical regions. This infection is primarily transmitted through dogs and cats, with humans serving as paratenic hosts. When the parasite's larvae enter the body, it can cause inflammation and nerve damage. We present a case where the larva caused a reaction in the brain tissue, leading to neuritis and a space-occupying lesion. This unique manifestation highlights the intricate interplay between *Toxocara* infection and neurological pathology.

A 46-year-old migrant farmer from Nicaragua presented with gait imbalance, facial numbness, and diplopia for two weeks. During the physical exam, decreased sensation to light touch and temperature was observed on the right side of the face in the V1-V3 region, along with nystagmus with a right-sided fast component. A CT scan upon admission showed no abnormalities, but an MRI of the brain revealed a solitary ring-enhancing non-cavitary lesion near the entrance of Cranial Nerves VII and VIII at the cerebellopontine angle. Preliminary serology testing indicated a potential infection with *Borrelia burgdorferi*, but Western blot testing and CSF Lyme studies were negative. The patient tested positive for IgG serology for toxoplasma and *Toxocara*, but *Toxoplasma* PCR on CSF was negative. CSF cytology revealed a borderline pleocytosis of 5 WBCs per microliter with lymphocytic predominance and a CSF eosinophilia of 4%. Fungal workup and arboviral serology panel testing on CSF were unremarkable. Biopsy of the brainstem to rule out malignancy was deferred due to concerns for high risk of injury. A diagnosis of *Toxocara* neuritis and neuro toxocariasis was made based on risk factors, positive serology, mild eosinophilia, and inability to biopsy his brainstem to exclude malignancy safely. Treatment with albendazole 200mg PO BID and low-dose dexamethasone for 21 days was prescribed, which resulted in complete symptom resolution upon follow-up in 3 weeks and a decrease in size and enhancement of the cerebellopontine lesion on a repeat MRI of the brain.

Neurotoxocariasis is a rare yet severe sequel of toxocariasis. Patients experiencing this condition commonly present with symptoms such as myelitis, optic neuritis, and meningoencephalitis, and may exhibit solitary ring-enhancing lesion with or without neuritis of other nerves. The possibility of neurotoxocariasis in cases of neurological symptoms and concerning imaging results should be considered, even if they do not satisfy conventional diagnostic criteria. Albendazole is typically administered due to its superior bioavailability, while NSAIDs or corticosteroids may be used to alleviate symptoms arising from an allergic response to the parasite's antigens.

**36) SEVERE DEBILITY FOLLOWING A BEE STING- A RARE CASE OF ACUTE INFLAMMATORY DEMYELINATING POLYNEUROPATHY FOLLOWING A BEE STING AND THE IMPACT OF GLUCOCORTICOIDS ON CLINICAL OUTCOMES.**

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Local or systemic allergic reactions are the usual clinical manifestations of bee stings. However, quite uncommonly, bee venom exposure, can result in neurological complications like encephalitis, stroke, neuromuscular paralysis, and very rarely inflammatory polyneuropathy. Here we present a 80-year-old apparently healthy man who developed acute demyelinating polyneuropathy following a ground bee sting which was diagnosed by muscle and nerve biopsy. Diagnosis is supported by progression of symptoms over a four weeks period, CSF Cytoalbuminologic dissociation and consistent electromyographic abnormalities consistent with a demyelinating neuropathy.

### 37) USE OF ABEMACICLIB IN RECURRENT OVARIAN CANCER

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**Introductions:** There is a high tendency for papillary serous adenocarcinoma of the ovary to recur within a short period of time, and usually it is high grade. Here we present a case of recurrent ovarian carcinoma treated with abemaciclib after failed multiple lines of cytotoxic chemotherapy and showed no recurrence

**Case presentation:** We present the case of a 74 year old woman without any significant family history of cancers with stage IIIc papillary serous adenocarcinoma of the ovary. First diagnosed in February 2016, she underwent s/p bilateral salpingo-oophorectomy with hysterectomy, tumor debulking, omentectomy, and pelvic and aortic lymph node dissection. Her tumor was Homologous recombination deficient (HRD) positive and BRCA negative on next generation sequencing, her genetic analysis showed CDK4 amplification. She was initially treated with adjuvant paclitaxel/carboplatin and bevacizumab for two years. Our paclitaxel/carboplatin therapy was discontinued in 2018 for non-responsiveness, indicated by increased CA 125 levels and a progressing tumor on CT scans of the abdomen. Afterward, many chemotherapeutic agents were tried which include docetaxel (taxane) for 9 months, olaparib (poly (ADP-ribose) polymerase (PARP) enzyme inhibitor) for 5 months, gemcitabine and carboplatin for 3 cycles however no significant improvement was noted. As the patient failed multiple chemotherapeutic agents, she underwent hyperthermic intraperitoneal chemotherapy surgery and interval debulking therapy in 2019. The pathology report showed high-grade serous carcinoma involving the sigmoid colon, spleen, stomach, and tail of the pancreas. This time, we reviewed multiple research studies, which showed there are multiple ongoing trials of the use of abemaciclib, a cyclin-dependent kinase inhibitor commonly used to treat breast cancer that has some role to manage ovarian cancer. After discussion, we started abemaciclib and the patient showed significant improvement. There was no relapse or recurrence was noted after starting abemaciclib.

**Discussion and conclusion:** A novel class of cell cycle inhibitors, cyclin-dependent kinase 4/6 inhibitors (CDK4/6) induce G1 phase arrest by targeting the cyclin D-CDK4/6 complex. These agents have been shown robust effect on hormone positive, HER 2 negative breast cancers. In recent clinical trials, CDK4/6 inhibition may have therapeutic potential in treating recurrent ovarian cancers.

## 38) MANAGING HIGH OSTOMY OUTPUT: A COMPREHENSIVE APPROACH

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**Introduction:** High ostomy output, defined as an output exceeding 1.5 to 2 liters per day, has potential implications such as electrolyte imbalance and dehydration. Timely recognition, accurate assessment, and vigilant monitoring of patients' fluid and electrolyte status are of paramount importance.

**Case Description:** We report a complex case of a 71-year-old female diagnosed with stage IV colon cancer metastasized to the liver. Following chemotherapy, she encountered a large bowel obstruction due to a sigmoid mass, necessitating a transverse loop colostomy. However, postoperatively, her ostomy output alarmingly increased from 1L/day to 4L/day within two days, causing notable electrolyte abnormalities that resisted medical management. A multidisciplinary team, encompassing Internal Medicine, Gastroenterology, Oncology, Nephrology, Acute Care Surgery, Ostomy Nursing, and Nutrition, collaborated to formulate an individualized care plan. Despite rigorous dietary adjustments and a comprehensive bowel regimen, including cholestyramine, diphenoxylate-atropine, loperamide, methylcellulose, octreotide, rifaximin, and opium tincture, the high ostomy output and electrolyte imbalance persisted. Given the patient's unique requirements, a palliative care consultation was sought for goal-of-care discussion. Ultimately, the patient expressed her preference for home hospice care.

**Discussion:** Managing high ostomy output presents a formidable challenge to patients and healthcare providers alike. It necessitates a holistic, multidisciplinary approach that includes fluid and electrolyte management, dietary modifications, medication-based interventions to minimize stoma output, peristomal skin care, patient education, and emotional support. By instituting a comprehensive care plan tailored to the patient's unique needs, healthcare providers can optimize clinical outcomes and improve the patient's post-ostomy quality of life. This case underscores the significance of patient-centric care, illuminating the importance of education, counseling, and emotional support in facilitating shared decision-making.

### 39) SPLENIC ABSCESS DUE TO GEMELLA HAEMOLYSANS IN A PATIENT WITH METASTATIC PANCREATIC ADENOCARCINOMA

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**Introduction:** *Gemella haemolysans* is a Gram-positive, facultative anaerobic bacterium, typically residing as a commensal organism in the human upper respiratory, gastrointestinal, and genitourinary tracts. While usually benign, it can serve as an opportunistic pathogen inciting localized and systemic infections, especially in immunocompromised individuals.

**Case:** This case report illustrates a rare presentation of a splenic abscess, induced by *G. haemolysans*, in a 68-year-old male undergoing chemotherapy for metastatic pancreatic adenocarcinoma. The patient initially presented with a clinical picture suggestive of worsening abdominal pain, diarrhea, fever, and tachycardia. Imaging studies revealed a pancreatic mass with splenic vessel involvement and a splenic hypodensity. A CT-guided aspiration of the splenic fluid confirmed *Gemella haemolysans* infection. Notably, the patient had no bacteremia and responded favorably to a therapeutic regime comprising ceftriaxone and metronidazole, achieving symptomatic relief and normalization of white blood cell count. The patient was discharged on intravenous ceftriaxone for 6 weeks.

**Conclusion:** *Gemella* species are opportunistic pathogens associated with various infections, and their identification can be challenging. This case highlights the importance of considering *Gemella* species in high-risk individuals with slow-growing, gram-positive cocci infections. Prompt recognition and appropriate antibiotic therapy can result in favorable outcomes, as demonstrated in this case.

## 40) TRANSIENT GLOBAL AMNESIA FOLLOWING SEXUAL INTERCOURSE: A CASE REPORT

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Transient Global Amnesia (TGA) is a neurological condition marked by an abrupt, temporary loss of memory. It's not attributed to more typical neurological disorders such as epilepsy or stroke. TGA's exact cause remains largely unknown, with certain triggers like physical exertion and Valsalva-like maneuvers implicated. Among these triggers, sexual activity has been acknowledged as a potential instigator. This case report details an occurrence of TGA following a post-coital event.

A 68-year-old male patient with a significant medical history of well-controlled hypertension and hyperlipidemia presented to the emergency department. The patient exhibited sudden confusion and retrograde amnesia immediately following sexual intercourse. His wife provided an account of the evening's events, stating that the patient was unable to recall them, including their sexual activity. Upon examination, the patient did not exhibit any other neurological deficits, and his vital signs were stable.

Given the abrupt onset of symptoms and the patient's age, a stroke was initially suspected. However, comprehensive neuroimaging examinations, including head CT, CTA, and an EKG, did not reveal any acute abnormalities, effectively ruling out a stroke. Over several hours, the patient showed gradual improvement, with his confusion and memory deficit lessening.

The patient's condition continued to stabilize, and a subsequent MRI did not reveal any acute intracranial abnormalities, further solidifying the diagnosis of TGA. This recovery timeline, in addition to the absence of neurological deficits or abnormalities on imaging, is characteristic of a TGA episode.

This case underscores the need for healthcare professionals to consider sexual activity as a potential trigger for TGA. Despite TGA typically being a benign and self-limiting condition, its sudden onset can mimic severe neurological conditions such as stroke. Therefore, a thorough evaluation is crucial to ensure an accurate diagnosis and implement appropriate patient management strategies.

In conclusion, this case provides valuable insight into the association between sexual activity and TGA, emphasizing the importance of a comprehensive history-taking and assessment in achieving accurate diagnosis and effective management.

**Keywords:** Transient Global Amnesia, Post-Coital, Valsalva Maneuver, Memory Loss, Stroke.



## **41) GOLDENHAR SYNDROME SURGERY: STROKE RISKS LINKED TO AIR EMBOLISM OR SURGICAL TRAUMA**

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Goldenhar syndrome, a rare congenital anomaly, is characterized by craniofacial malformations that often require complex surgical interventions. These interventions, while essential, may predispose patients to a multitude of postoperative complications, including the relatively rare occurrence of stroke potentially related to air embolism or local surgical trauma. We present an illustrative case of a 20-year-old male patient who encountered such an adverse event following orthognathic surgical procedures.

The patient underwent LeFort I maxillary osteotomy, bilateral sagittal split ramus osteotomy of the mandible, and anterior iliac crest bone grafting to the right maxilla. Postoperatively, he developed several complications including significant intraoperative blood loss, meningitis, and cerebrospinal fluid (CSF) rhinorrhea. Notably, he suffered an acute ischemic stroke in the left thalamus, the etiology of which was hypothesized to be related to an air embolism or local surgical trauma.

Multimodal imaging revealed a defect in the posterior wall of the sphenoid sinus and tuberculum sella, suggesting a CSF leak. Prompt intervention with a fluoroscopically guided lumbar drain placement resulted in significant symptom amelioration. Moreover, a comprehensive multidisciplinary approach involving neurology, neurosurgery, infectious disease, and oral and maxillofacial surgery teams ensured effective patient management and successful resolution of the CSF rhinorrhea and meningitis.

This case highlights the manifold challenges in managing Goldenhar syndrome patients undergoing complex surgical interventions. It also underscores the potential risk of stroke occurrence due to air embolism or surgical trauma, a relatively under-reported phenomenon. The necessity for a holistic, multidisciplinary approach is emphasized, showcasing its efficacy in managing such intricate complications. Future research is warranted to elucidate strategies for risk reduction and optimal management of such scenarios in this unique patient population.

## 42) BE ON THE LOOKOUT: A CASE OF OCULAR SYPHILIS

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**Introduction:** Ocular syphilis is a manifestation of neurosyphilis, a *treponema pallidum* infection involving the central nervous system. It is quite rare, occurring in less than 1% of those diagnosed with syphilis and is not always associated with other neurological manifestations. However, with rates of syphilis on the rise across the US, having a higher degree of clinical suspicion is key in appropriately diagnosing those that present with ocular symptoms.

**Case Description:** A 43-year-old male with a history of male sexual partners on PrEP (pre-exposure prophylaxis) presents with a 1-week history of right sided scotoma and progressive bilateral blurry vision in the absence of other neurologic changes. Exam is pertinent for reduced visual acuity and optic nerve edema bilaterally. He is empirically started on 24 million units daily of penicillin G and prednisolone eye drops while awaiting laboratory results. Serum treponemal antibody is found to be positive with an RPR titer of 1:64. Lumbar puncture is completed with CSF positive for treponemal antibody. The patient completed 2 weeks of IV penicillin therapy with subsequent RPR titers following discharge trending downward. At 2 month follow up, he had improved retinal exam and optic nerve edema but persistent mild optic disc thickening. At 4 month follow up, he had ongoing improvement in residual retinal changes and visual acuity had improved to his prior baseline.

**Discussion:** Here, we present a patient with a rare case of ocular syphilis with isolated visual symptoms. With syphilis prevalence rates at a seventy-year high, it is important to recognize albeit rare but serious cases of ocular syphilis. Having this on your differential diagnosis in patients with isolated visual complaints is especially important as over one third of those diagnosed with ocular syphilis have no other signs or symptoms suggestive of *treponema pallidum* infection. Prompt treatment with a combination of IV penicillin and ophthalmic steroids can lead to recovery of visual acuity and resolution of ocular symptoms. If the diagnosis is missed and inappropriate treatment is trialed, particularly systemic or ophthalmic steroids to reduce inflammation, the chances of visual acuity recovery lessen. This case serves to encourage providers to raise their degree of clinical suspicion, especially in patients with appropriate risk factors.

### 43) MYOCARDITIS, AN UNDER-REPORTED CARDIAC ASSOCIATION IN A PATIENT WITH NECROTIZING MYOSITIS

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**Introduction:** Necrotizing autoimmune myopathy (NM) is a subset of idiopathic inflammatory myopathies (IIM). Common findings in this rare disease include proximal limb weakness, dysphagia, and elevated creatine kinase (CK). While clinical cardiac involvement is uncommon, dyspnea, angina, dysrhythmias, and echocardiographic diastolic dysfunction are the most common cardiac manifestations. Myocarditis has previously been described in less than 3% of patients presenting with inflammatory myopathies. We present a patient with a chief complaint of chest pain found to have myocarditis in the setting of newly diagnosed necrotizing myositis.

**Case presentation:** A 63-year-old female with a past medical history significant for Lupus, CAD, hypertrophic cardiomyopathy, atrial flutter, COPD, pulmonary hypertension, and vaginal squamous cell carcinoma post chemoradiation presented with recurrent chest pain and weakness. She had presented one month prior with chest pain and dyspnea found to have troponin to 2223. Subsequent left heart catheterization revealed luminal irregularities with an LVEDP of 10. The diagnosis at discharge was chest pain due to left ventricular outflow tract obstruction (LVOTO). She presented again one month later with left-sided, pleuritic, reproducible chest pain and weakness. Initial lab workup was significant for troponin of 6665, and she was admitted with concern for ACS. Further workup revealed kidney injury to creatinine of 1.57, CK of 3402, positive ANA (baseline positive) with positive SSA antibody, and weakly positive signal recognition peptide antibody (SRP-Ab). Cardiac MRI (CMR) showed asymmetric septal hypertrophy without systolic anterior motion or LVOTO, evidence of basal myocardial edema and subepicardial enhancement consistent with myocarditis. During the hospitalization, she developed worsening myalgias, arthralgias, and dysphagia. Subsequent muscle and renal biopsies showed necrotizing myositis and interstitial fibrosis with tubular atrophy respectively. The final diagnosis was felt most likely to be SRP positive necrotizing myositis by rheumatology. This patient was started on IVIG in addition to glucocorticoids prior to discharge with marked improvement.

**Discussion:** This case highlights the importance of establishing a definitive diagnosis in patients with a complex medical history as our patient's recurrent presentation suggested persistent uncontrolled inflammation perhaps contributing to her degree of myocardial, renal, and muscular tissue injury. Necrotizing autoimmune myositis is a rare disorder occurring in only about 19% of those with idiopathic inflammatory myopathies. It is often associated with statin use, connective tissue diseases, cancer, and more rarely HIV. Common symptoms include weakness, myalgias, and dysphagia. Laboratory findings include CK as a direct marker of muscle injury with SRP-Ab and HMGCR-Ab being the most common serum autoantibody markers. Myocarditis is an uncommon finding in idiopathic inflammatory myopathies and may be underreported due to lack of CMR and endomyocardial availability. Recurrent myocarditis and fibrosis of the conduction system, vasculature, and myocardium is believed to contribute to arrhythmias and heart failure. While heart failure is the most common cause of cardiac mortality in IIM, myocarditis portends poor outcomes with an approximate 30% decrease in 5-year survival. Given the mortality associated with cardiac involvement, thorough laboratory and imaging-based evaluation should be performed in those patients with IIM who are suspected to have cardiac manifestations.

## 44) A RARE PRESENTATION OF STREPTOCOCCUS CONSTELLATUS LIVER ABSCESS

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**Introduction:** Streptococcus constellatus, Streptococcus anginosus, and Streptococcus intermedius collectively form the Streptococcus melleri group (SMG). These gram-positive cocci are widely distributed in the oral cavity, nasopharynx, gastrointestinal tract, and genitourinary tract of 15-30% of healthy individuals. While most infected patients will not experience symptoms, these bacteria have the potential to cause invasive disease throughout the body, including bacteremia and localized infections in the central nervous system, thoracic region, and abdomen. They can form abscesses that are typically solitary and often present with fever and right upper quadrant pain. Risk factors for symptomatic disease include concurrent biliary tract or hepatic disease, prior biliary interventions, and immunosuppression.

**Case description:** This case involves a 40-year-old male with type 2 diabetes mellitus who was transferred from an outside hospital due to weight loss and an expanding right upper quadrant (RUQ) abdominal mass. Examination revealed a grossly visible, 10 cm protruding RUQ mass that was firm and fixed without erythema or drainage. Abdominal ultrasound revealed a heterogeneous, multi-loculated, multi-septate mass with solid and cystic regions. MRI revealed intra and extrahepatic portions with the extrahepatic portion invading the abdominal wall. Initial concern on presentation was for amoebic abscess or hydatid cyst due to the patient's young age and cystic nature of the imaging. The team was initially hesitant to aspirate the mass due to concern for anaphylaxis but was forced to proceed due to impending rupture of the mass. An aspirate was sent to the Center for Disease Control which revealed positive Streptococcus constellatus identified by 16S PCR.

**Discussion:** This case presented an atypical manifestation of Streptococcus constellatus, both in terms of the infectious presentation and characteristics of the mass. The patient initially presented afebrile, without leukocytosis, and without significant abdominal pain, all of which were surprising due to the size of the mass. He also lacked typical risk factors; he did not have a history of hepatic or biliary disease and was immunocompetent with only diabetes mellitus as a comorbidity. Furthermore, the abscess had unique characteristics as it was cystic, multi-loculated and invaded the abdominal wall. Streptococcus constellatus is a difficult organism to identify but is an important cause of hepatic abscesses that must be considered in all cases, even those without classic risk factors.

## 45) PERICARDIAL EFFUSIONS TO IBD ILLUSIONS: AN ATYPICAL PRESENTATION OF GPA WITH INTESTINAL AND PLEUROPERICARDIAL INVOLVEMENT

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**INTRODUCTION:** Granulomatosis with Polyangiitis (GPA) is a type of necrotizing vasculitis that primarily affects small-sized arteries. GPA can cause non-specific symptoms including fever, weight loss, myalgias, and arthralgias; however, presentations are highly variable depending on organ(s) affected. Most commonly, it affects the upper and lower respiratory tract and kidneys. Here, we report an unusual and convoluted case that led to a diagnosis of GPA.

**CASE DESCRIPTION:** A 29-year-old male with past medical history significant for pilonidal abscess, iron deficiency anemia, and intermittent rectal bleeding presented with an 8-day history of exertional dyspnea, hematochezia, and lower extremity rash.

His presenting exam was significant for tachycardia, right conjunctival/scleral injection with associated vision changes, diminished breath sounds in the right base, and non-blanching palpable purpuric rash over his bilateral lower extremities. Labs were notable for normal kidney and liver function. Computed Tomography (CT) scan demonstrated unilobar ground glass opacities. He was initiated on antibiotics for presumed pneumonia; however, he developed progressive hypoxia. Repeat chest CT demonstrated bilateral loculated pleural effusions, requiring partial lung decortication, adhesion lysis, and bilateral chest tubes. Additionally, he developed a large pericardial effusion, requiring pericardial window. Fluid studies revealed inflammatory cells without infectious source or malignancy.

He underwent colonoscopy for intermittent hematochezia. This revealed mucosal edema, erythema, and friability in the sigmoid colon, sparing the rectum. Biopsies showed moderately active colitis with features of chronicity (cryptitis, crypt abscess, Paneth cell metaplasia) suspicious for idiopathic inflammatory bowel disease. Skin biopsy of the lower extremity lesions returned as leukocytoclastic vasculitis (LCV). With Rheumatology and Gastroenterology collaboration, the initial suspicion was for Crohn's disease with extraintestinal manifestations. Eventually, further labs revealed positive P-ANCA (1:640), positive PR3 (340), negative C-ANCA, and negative MPO. With the disease manifestations including episcleritis, colitis, LCV, and pleuropericarditis, he was ultimately diagnosed with GPA. He was initiated on steroids, eventual Rituximab, and markedly improved.

**DISCUSSION:** This case demonstrates how difficult a diagnosis of GPA can be, given no single test or collection of symptoms are diagnostic, and the diversity of organ involvement can mimic other conditions like IBD. There have been case reports of patients with confirmed IBD that later develop GPA. There are also case reports of patients being diagnosed with GPA and Crohn's disease simultaneously, in what's mentioned as a GPA-IBD overlap syndrome. Extraintestinal manifestations of IBD can include cutaneous vasculitic rashes including LCV, episcleritis (2-5%), yet rarely involve the lungs. Interestingly, if lungs are indeed involved in IBD, up to 31% can develop pleuropericarditis. Additionally, in one study of 23 IBD patients without documented vasculitis, 22% had a positive PR3 and 15% had a positive MPO of unclear clinical significance.

In GPA, cutaneous vasculitic rashes are common in up to 50% of patients. Lung involvement is common, however with pleuropericarditis being less so. GI involvement has been reported in 10-24% of cases.

This patient's diagnosis of GPA took a collaborative effort with thorough investigation. This case illustrates the variable presentations of GPA and reiterates the importance of always keeping differentials broad in complex patients.

## 46) TIME AND SMALL BOWEL RUN SHORT: ZES WITH MULTIPLE PERFORATIONS AND BOWEL OBSTRUCTIONS LEADS TO SHORT GUT

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**Introduction:** Zollinger-Ellison syndrome (ZES) is a rare condition involving neuroendocrine tumor secretion of gastrin, leading to hypersecretion of gastric acid. Most commonly, these gastrinomas arise in the duodenum or pancreas, with an incidence of 0.5-2 per million people. Presentation can be sporadic or in association with a syndrome; most commonly, Multiple Endocrine Neoplasia type 1 (MEN1). ZES causes peptic ulcer disease, heartburn, and diarrhea. However, in extreme cases or when untreated, can have significant complications including bleeding, stricture, fistulization, and perforation. Here, we report a case that illustrates the importance of recognizing and treating ZES.

**Case Description:** A 38-year-old TPN dependent male with history of recurrent peptic ulcers complicated by perforations, status post numerous bowel resections, who presented with dysphagia secondary to recurrent esophageal strictures. Pertinent surgical anatomy included only 160cm of remaining small bowel that was diverted via ileostomy. Patient underwent EGD with dilation, but developed post-procedure pain and emesis requiring admission. Computed Tomography (CT) imaging was obtained and negative for recurrent perforation. Small bowel follow-through revealed partial gastric outlet obstruction. Chemistries revealed electrolyte derangements and a pre-renal AKI in the setting of GI losses with increased ostomy output. Given the patients young age and recurring bowel perforations, work-up for ZES was pursued for the first time. Chromogranin A was 3311ng/L (ref. 103ng/L), gastrin was only moderately elevated to 537pg/mL (ref. 100 pg/mL), and gastric pH 2 (performed on acid suppression). Dotatate PET/CT revealed abnormal tracer uptake along the inferior pancreatic head, suspicious for neuroendocrine neoplasm. IV Protonix 80mg BID was initiated given concern of absorption issues, as was famotidine, sucralfate QID and monthly octreotide. Additional workup revealed PTH and prolactin elevations, concerning for MEN1. Parathyroid ultrasound was suspicious for parathyroid adenoma. Surgical oncology discussed this case in a multidisciplinary fashion and decided to perform complex pancreaticoduodenectomy. Intra-operative biopsies confirmed well differentiated G1 neuroendocrine tumor. Following resection, gastrin levels 69 pg/mL.

**Discussion:** Diagnosis of ZES is made with fasting serum gastrin concentration and gastric pH (gastrin>10x ULN and gastric pH<2). Secretin stimulation test can be performed if initial testing is non-diagnostic. Additional testing suggestive of neuroendocrine tumor is elevated Chromogranin A, however this is not specific to ZES. In this patient, PPIs were unable to be safely stopped due to risk of bleeding and perforation; thus, presumptive diagnosis was made based on elevated gastrin level but <10x ULN, combined with Chromogranin A, imaging, and a convincing history. Typically, once diagnosis is made, tumor is localized with imaging, namely CT, MRI, or somatostatin receptor-based imaging such as dotatate scan. Some patients can undergo medical management with high-dose PPIs. Somatostatin analogues, such as octreotide, may be added. Definitive treatment, if refractory to the above, is surgery. This case illustrates ZES can be extremely severe and debilitating if not recognized and treated promptly.

## 47) ALWAYS MORE THAN JUST TACHYCARDIA

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**Introduction:** The exact incidence of tachycardia induced cardiomyopathy is unclear. However, it is important to note that most forms of supraventricular tachyarrhythmias have been associated with left ventricular (LV) dysfunction, usually reversible. We present a case of new cardiomyopathy in the setting of uncontrolled tachyarrhythmia. The purpose of this case report is to explore management strategies and highlight the importance of early recognition.

**Case:** 71-year-old male with relevant history of atrial flutter with successful cardioversion (DCCV) to normal sinus rhythm two years prior, hypertension, and type 2 diabetes who presented to the hospital with pain and fatigue after a motor vehicle accident (MVA). He was found to be in atrial fibrillation (AF) with rapid ventricular rates into the 150s. He denied any symptoms of chest pain, palpitations, shortness of breath, orthopnea, paroxysmal nocturnal dyspnea, or syncopal symptoms. Echocardiogram was done which showed severe elevated right atrial pressure of 15 mmHg and reduced Ejection Fraction of 15% (previously 50% on 3 years prior). It was suspected his new cardiomyopathy was caused by rapid AF, exacerbated by his recent MVA or alternatively may have been present prior to the incident. Other etiologies, such as ischemia, were ruled out. He was managed with IV diuretics for management of hypervolemia as playing a role in his rapid rates. He also underwent successful DCCV to normal sinus rhythm and was discharged with plan for bilateral Pulmonary Vein Isolation and Cavotricuspid Isthmus ablation.

**Discussion:** Tachyarrhythmia induced cardiomyopathy remains relatively rare and, often, a result from prolonged periods of time with tachyarrhythmia or even frequent ectopic beats. Clinical presentations can vary, but patients can present with symptoms of palpitations, related to frequency or irregularity of their arrhythmia, or heart failure. If concerned, continued cardiac monitoring and non-invasive imaging to assess structure and function should be the initial steps. Roughly 25 to 50% of patients with LV dysfunction and AF have some component of arrhythmia induced cardiomyopathy. There is less data on atrial flutter, but one study showed that 25% of patients undergoing ablation for atrial flutter had evidence of cardiomyopathy prior to the procedure. Important to note, many patients show improvement in LV function after management with rate and rhythm control strategies. For minimally symptomatic patients, rate control therapy may be reasonable, but for patients with LV dysfunction, restoration of sinus rhythm should be pursued. Early electrical cardioversion is indicated in these patients. Other rhythmic options include antiarrhythmic drugs or ablation of the arrhythmia. There is limited data on follow up, but these patients should have frequent and close follow up with clinic ECG, repeat echocardiogram, and ambulatory monitoring.

## 48) MRSA RELATED DIFFUSE LEPTOMENINGITIS PROGRESSING TO TRANSVERSE MYELITIS/MYELOPATHY

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**Introduction:** *S. aureus* meningitis is an uncommon disease 1%-9% of meningitis cases. Methicillin Resistant Staphylococcus aureus (MRSA) myelitis is exceptionally rare, with only few published case series.

### **Pathogenesis**

- Postoperative meningitis
- Spontaneous meningitis secondary to infection outside the CNS.

**Case description:** A 60-year-old male with history of IV heroin use presented with acute severe back pain. He was ambulatory presentation.

- Initial lumbar-sacral MRI demonstrated a subtle thin epidural fluid collection along the ventral spinal canal at L3-S1.
- Blood cultures grew MRSA and Vancomycin (MIC  $\leq 0.5$ ) was continued
- Received antibiotics like daptomycin, ceftaroline, linezolid and rifampin during the treatment period.
- Trans-esophageal echocardiography (TEE) was negative for evidence of infective endocarditis, yet serial blood cultures persistently grew MRSA.
- Despite appropriate antibiotics, he developed progressive paraplegia with complete sensory level around T10 and over next two weeks developed quadriplegia with cervical sensory level.
- Follow up imaging showed cord edema initially in thoracic from T2-T7 with patchy enhancement that worsened to involve entirety of cervical cord and T1-T10 with central cord enhancement. There was associated diffuse leptomeningeal thickening and enhancement extending from the skull base through the entire spine with extensive enhancement of the cauda equina and extensive dorsal epidural collection. Nucleated cells (1 though specimen was clotted)
- RBC (11,700 with xanthochromia)
- Protein (3,218)
- Rapid panel and culture negative.

Burden of disease was felt to be too high for neurosurgical drainage and intrathecal antibiotics via lumbar drain was considered but felt this would not be effective.

- IV antibiotics along with later a course of steroids for associated inflammation was the mainstay of treatment. Steroids not continued due to fevers
- Repeat TEE on hospital day negative
- Hospital course complicated by autonomic involvement leading to bradycardia and cardiac arrest
- Ultimately made comfort care and passed due to progressive decline.

**Discussion:** Patients with MRSA-associated spinal cord inflammatory syndromes including leptomeningitis, myelitis and epidural abscesses is a clinically challenging situation as it may involve a combination of mechanisms for progression including infectious, reactive inflammation, vasculitis with ischemia. While literature suggests patients may have a favorable response to vancomycin, the best approach for patients with progressive disease despite IV antibiotics remains unclear with uncertainty about efficacy of alternative IV antibiotics, intrathecal delivery of antibiotics or use of immunomodulatory drugs to calm reactive inflammation.



## 49) PEMBROLIZUMAB FOR METASTATIC PENILE SQUAMOUS CELL CARCINOMA: A RARE CASE

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**Introduction:** Penile cancer is rare in the US with an estimated incidence of 0.81/100000 population and accounts for about 460 deaths annually. It has a peak incidence in late 60s. Some known risk factors include HPV infection, non-circumcised penis, poor penile hygiene, lichen sclerosus, smoking, penile trauma and multiple sexual partners.

Pathogenesis includes HPV dependent and HPV independent pathways. The former involves viral oncoprotein overexpression and the latter is driven by chronic inflammation.

**Case Report:** Patient is an 87 y/o male with a history of type 2 Diabetes mellitus, CKD stage 3b, Anemia of chronic disease, and HTN, who initially presented to his PCP with a complaint of bleeding from his penis for about 6 months. Physical examination revealed a fungating friable mass on his glans penis with blood and whitish discharge. CT abdomen/pelvis revealed markedly enlarged bilateral inguinal lymph nodes. Subsequent CT chest showed about 5 pulmonary soft tissue dense nodules measuring between 0.4 and 1.1 cm, highly suggestive of metastatic disease. Ultrasound-guided biopsy of left inguinal lymph nodes showed metastatic, moderate to poorly differentiated carcinoma with squamous differentiation.

Patient was not deemed an ideal candidate for neoadjuvant therapy because of his age and underlying comorbidities. Subsequent PDL-1 testing showed a 100% positivity and after informed decision making, patient was initiated on pembrolizumab 200 mg every 3 weeks with a urology follow-up for surgical evaluation.

Because of the complexity of the surgical intervention which includes total penectomy and bilateral superficial and deep inguinal node excision, increased mortality risk given the patient's age, and according to the patient's wishes, it was ultimately decided to continue with pembrolizumab therapy alone without surgical intervention. After 11 cycles of immunotherapy, patient developed fatigue although his hemoglobin level remained fairly close to his baseline at 7.7 g%. He was initiated on darbepoetin. He completed 14 cycles of pembrolizumab and has been tolerating the treatment well after almost 1 year of initial diagnosis.

**Discussion:** The initial evaluation for a patient suspected to have penile cancer includes assessment of inguinal lymph node involvement, which can guide further evaluation with CT or MRI of Abdomen/pelvis and chest imaging. For local disease, surgical resection is curative in most cases. In the event of unilateral or bilateral palpable mobile inguinal lymph nodes, recommended approach is superficial and deep inguinal lymph node dissection. In cases with bulky or fixed palpable inguinal lymph nodes, the preferred approach is neoadjuvant chemotherapy followed by inguinal lymph node dissection. For elderly patients who are not eligible for the above management options, pembrolizumab a highly selective anti PD-1 antibody looks like a promising option.

The above case represents rare use of pembrolizumab alone for treatment of advanced penile SCC. There are few other case reports that support the use of pembrolizumab as salvage therapy in patients with nonresectable, locally advanced or metastatic penile SCC.

## 50) “DOCTOR, I SEE HAZY NOW!”

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**Introduction:** Giant cell arteritis (GCA) is a systemic inflammatory vasculitis of medium and large sized arteritis that leads to ischemic optic neuropathy. If left untreated, it can result in many systemic, neurologic, and ophthalmologic complications. Although the temporal artery is most commonly involved, other arteries may also be affected. GCA can present atypically which can lead to delays in diagnosis and potentially irreversible complications such as vision loss.

**Case:** A 74-year-old male with a history of hypertension, hyperlipidemia, carotid artery stenosis, distant history of bilateral renal infarction, and paroxysmal Atrial fibrillation on Warfarin presented with 4 weeks of proximal muscle weakness, night sweats, headaches, weight loss, blurry vision, and transient partial, painless vision loss in the setting of a potential tick exposure. Due to concern for tick-borne disease, he completed a 10-day course of doxycycline without improvement in symptoms. He had a nodular left temporal artery but this was not tender, and he described no temporal/frontal headaches, jaw/tongue claudication, tender scalp spots, bruits of the neck vessels, or strong radial/temporal pulses. His labs were notable for elevated inflammatory markers, leukocytosis, thrombocytosis, elevated LFTs, normal CK, and negative autoimmune work up. His initial ophthalmology evaluation noted no signs of anterior ischemic optic neuropathy. Differential diagnosis included GCA, inflammatory myopathy vs. Infectious process vs neurological process vs. malignancy. He continued to have recurrent episodes of brief transient vision loss and ophthalmology was re-consulted. Based on their evaluation, he was noted to have bilateral cotton wool spots. Given increased concern for GCA, and otherwise negative infection, inflammatory and malignancy workup, he was treated with IV steroids empirically and eventually underwent temporal artery biopsy with ENT which showed inflammation consistent with a diagnosis of GCA. He noted improvement in his fatigue, leukocytosis, thrombocytosis after he received high dose steroids with a total of 3 g of IV solumedrol. For evaluation of other large vessel involvement, he had a CT chest/abdomen/pelvis which was significant mixed medium and large vessel disease including irregular ulcerative plaque along the aortic arch, short segment distal abdominal aortic dissection and aortoiliac atherosclerosis, as well as distal renal arterial disease and his antihypertensives were optimized. He continued treatment with oral steroids on discharge and will be transitioned to tocilizumab by rheumatology.

**Discussion:** GCA should be highly considered even with presentation of atypical visual symptoms not classic for monocular vision loss with no amaurosis. Given the risk of irreversible visual loss, treatment with corticosteroids should not be delayed in cases with high clinical suspicion. Biopsy should be performed as early as possible after suspicion of GCA has been raised, and the yield of biopsy is still very high until 2 weeks after initiation of corticosteroids. Temporal artery biopsy is a minimally invasive procedure done under local anesthesia and preliminary results can be available as soon as 24 hours and expedite diagnosis in cases such as this with an atypical presentation.

## 51) RENAL LIMITED P-ANCA VASCULITIS

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**Introduction:** Renal limited P-ANCA vasculitis is a rare form of vasculitis characterized by the presence of perinuclear anti-neutrophil cytoplasmic antibodies (P-ANCA) and involvement limited to the kidneys. The case highlights the clinical presentation, diagnostic workup, management, and outcomes of a patient diagnosed with renal limited P-ANCA vasculitis.

**Case Presentation:** A Caucasian female with a significant medical history of Chronic kidney disease stage 3 with baseline creatinine 1.2-1.4, chronic thromboembolism pulmonary hypertension (CTEPH), heparin-induced thrombocytopenia (HIT), deep vein thrombosis (DVT), unprovoked pulmonary embolism (PE), and brachial artery thrombosis, presented with confusion, generalized weakness, and minimal urine output. Her family denied any history of respiratory symptoms, skin rash, joint pain, or other systemic complaints. These findings raised concerns about acute kidney injury (AKI), prompting further investigation. Admission blood work revealed a Creatinine of 6.54, which, one week ago as part of an outpatient workup for CTEPH, was at her baseline. Urinalysis revealed the presence of proteinuria and microscopic hematuria, which are common findings in vasculitic glomerulonephritis. Immunological testing demonstrated positive myeloperoxidase (MPO) antibodies, indicating P-ANCA-associated vasculitis. The management of renal limited P-ANCA vasculitis typically involves immunosuppressive therapy, and the patient was initiated on methylprednisolone and rituximab. The prompt initiation of therapy resulted in a significant improvement in renal function and mental status. Imaging studies ruled out any obstructive uropathy. The absence of any other etiology and improved kidney function with immunosuppressive therapy supported the diagnosis of vasculitis as the primary cause of the patient's renal dysfunction.

**Discussion:** It is important to consider vasculitis as a potential etiology in patients with acute unexplained kidney injury, even in the absence of systemic symptoms. In this case, the patient's history of thromboembolic events, along with the presence of proteinuria and microscopic hematuria, raised suspicion for vasculitis and prompted further investigation.

**Conclusion:** The decision to perform a kidney biopsy in cases of renal-limited P-ANCA vasculitis should be individualized. In this case, a biopsy was not performed due to the patient's improved kidney function with the therapy and the high risk associated with holding anticoagulant therapy. However, it is important to consider the potential benefits of kidney biopsy in certain cases to provide additional diagnostic information and guide treatment decisions.

## 52) TWO STONES, ONE BIRD: A CASE OF PERICARDIAL EFFUSION WITH CONCOMITANT INFLUENZAE B PNEUMONIA AND ACTIVE RHEUMATOLOGIC FLARE.

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**Introduction:** Pericardial effusions are commonly encountered, develop across all ages and populations, and can progress to cardiac tamponade. Viral pericarditis is the most common cause of effusions with bacterial infection, rheumatologic disease, malignancy, trauma, metabolic, parasitic or fungal infection, or drug-induced causes being fewer common etiologies in the developed world. Here we consider two possible causes of pericardial effusion, rheumatologic vs bacterial process, and highlight the difficulty confirming the diagnosis and treatment given its variability across demographic characteristics and etiology.

**Case Presentation:** A 44-year-old woman with a history of fibromyalgia and newly diagnosed rheumatoid arthritis/lupus overlap (+ANA, +CCP, +SSA) presented to the emergency department with progressive fatigue, malaise, joint pain, dry cough, and chest pain. Upon admission, she had a troponin of 0.04 and BNP of 256. Cardiac POCUS by the Medicine team on the day of admission showed grossly normal LV and RV size, normal wall motion, and no pericardial effusion. Initial EKG showed NSR with slight diffuse PR segment depression. With her polyarticular inflammatory arthropathy and fatigue most likely due to SLE/RA, she was treated with high-dose steroids in addition to outpatient hydroxychloroquine dose, with symptomatic improvement. Due to increased chest discomfort and dry cough a formal TTE was done showing a pericardial effusion with mild tamponade based on RV anterior wall collapse. Chest imaging showed no pneumonia, but sputum cultures returned positive for influenzae B, prompting concern for purulent pericarditis. A cardiac MRI was done revealing a small, non-loculated pleural effusion without constrictive physiology or tamponade. As the fluid was not loculated and without any material within the effusion, purulent pericarditis was thought unlikely and pericardiocentesis was not pursued given the small amount of fluid present. Colchicine was added to her steroids, and she remained afebrile without clinical decompensation. Thus, her pericarditis was thought to most likely be SLE/RA associated. Two weeks after discharge repeat TTE showed that the effusion was still present but stable.

**Discussion:** Purulent pericarditis is an infrequent disease process and there have only been a few documented cases where it has been caused by influenzae B. Due to its high mortality rate of 30-50% appropriate therapy should be considered. Cardiac MRI findings and clinical status in our case made purulent pericarditis much less likely. A pericardiocentesis was considered but the risk was felt to outweigh the benefit here given clinical stability and the small amount of fluid present. The management of pericardial effusions can be complex, especially in patients with underlying rheumatologic disease and evidence of bacterial infections, but using labs, ultrasound, MRI, and the clinical status of the patient can help avoid guide treatment.

## 53) CEREBRAL EDEMA AND TONSILLAR HERNIATION IN A PATIENT WITH MYXEDEMA COMA

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Myxedema coma is a rare endocrine emergency that arises as a complication of severe hypothyroidism. We present a case of myxedema coma in a 59 year old male patient with longstanding hypothyroidism. He presented to the emergency department with complaints of fatigue, lower back and leg pain. The patient reported that he had not been seen by a doctor or taken his thyroid medication for the past 18 years and did not have prior records available in the medical record system. Thyroid stimulating hormone levels were elevated at 43mIU/L and free T4 levels were undetectable. He was not grossly edematous, but imaging did show a large pericardial effusion with stigmata of heart failure, scattered pulmonary edema, and new bilateral hydroceles. Initial mental status was appropriate, but the patient became increasingly confused and disoriented throughout his emergency department course. He was sent to the echo suite prior to being admitted to the floor, and upon arrival to the floor, the patient was noted to be obtunded and not responding to verbal or painful stimulation. His eyes were deviated downward to the left and exam showed intermittent posturing and muscle rigidity. This acute, rapid deterioration in mental status prompted emergent rapid response call and patient was transferred to the medical intensive care unit. Further neuroimaging demonstrated evidence of cerebral edema with cerebellar tonsillar herniation and global hypoxic ischemic injury. The patient's course was further complicated by progression of his pericardial effusion with cardiac tamponade; mixed cardiogenic, obstructive, and septic shock; Streptococcus pneumonia bacteremia; type 4 respiratory failure; pancytopenia; and multiple infarcts to the right popliteal artery and bilateral renal vasculature. He was managed with IV levothyroxine and liothyronine with the help of the endocrinology service and required multiple vasoactive medications and stress dose steroids due to hemodynamic instability. Ultimately, his poor neurologic prognosis was discussed with his family, who elected to proceed with terminal extubation.

Myxedema coma often presents with altered mental status, hypothermia, hypotension, hypoglycemia and hypoventilation, although there are no specific criteria for diagnosis. It often progresses from unrecognized or, as in the case of this patient, untreated hypothyroid disease, and can be precipitated by an acute stressor such as infection, trauma, or anesthesia. Although our patient did not have all the classic findings of myxedema coma, his acute altered mental status with cerebral edema and severely depressed cardiac function was felt likely to be a result of his decompensated hypothyroid state. Patients with myxedema coma can sometimes present with concomitant adrenal insufficiency, which may have been the case in our patient; however, this was never proven in our patient as he received steroids prior to evaluation. While prevention and treatment of myxedema coma have improved with advances in thyroid screening and management strategies of severe hypothyroidism, myxedema coma continues to be associated with a high mortality rate if not promptly recognized and addressed.

# Medical Student Posters

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## 1) DISSEMINATED SARCOIDOSIS

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Sarcoidosis is a complex multisystem disease that is driven by an immune reaction primarily involving T cells, often accompanied by an inverted CD4/CD8 ratio, elevated levels of tumor necrosis factor (TNF) and TNF receptors, as well as B cell hyperreactivity and increased immunoglobulin production. The disease is characterized by the presence of noncaseating granulomas in various organ systems. The development of granulomas is believed to be influenced by both genetic and environmental factors, which makes predicting disease progression challenging. Depending on the affected organ systems and the extent of granuloma formation, sarcoidosis can have detrimental effects. Hence, early detection and appropriate follow-up are crucial for preventing adverse events. Treatment of the disease typically involves the use of anti-TNF agents, phosphodiesterase inhibitors, and prostacyclin analogues. Glucocorticoids are often the first-line treatment for acute manifestations. Because sarcoidosis can affect multiple organ systems, a multidisciplinary approach is usually recommended to achieve the best outcomes.

A 53-year-old female with a past medical history of anxiety, depression, HTN, type 2 DM, pulmonary sarcoidosis, neurosarcoidosis, obstructive sleep apnea, and chronic pain presented to the emergency department with altered mentation. The patient's symptoms initially included incoherent speech, which quickly progressed in the ED to an obtunded state, necessitating intubation. Prior to presentation, the patient had been undergoing prednisone weaning as per rheumatology recommendations, with a rate of 2.5mg decrease every three weeks due to a prior sarcoidosis flare. Initially, the patient was admitted to the Medical Intensive Care Unit and treated for presumed meningitis of unknown etiology with broad-spectrum antibiotics, antivirals, and high-dose intravenous hydrocortisone. During the MICU stay, the patient experienced a pulseless electrical activity arrest, requiring one round of compressions to achieve return of spontaneous circulation. Infectious workup, including lumbar puncture, yielded mostly unremarkable results. Antivirals and antibiotics were discontinued early in the clinical course, and the patient remained stable on high-dose steroids. A magnetic resonance brain scan revealed stable, extensive neurosarcoidosis. Transthoracic echocardiography and cardiac MRI suggested possible cardiac sarcoidosis as well as LAD disease. A CT scan of the chest showed perihilar and basilar opacities, as well as mediastinal and hilar adenopathy, likely corresponding to the known pulmonary sarcoidosis. Ultimately, this patient required a multidisciplinary approach involving rheumatology, cardiology, and neuroimmunology for comprehensive management. The high-dose hydrocortisone was gradually tapered to prednisone 30mg orally once daily, with plans for a slow taper. During the one-month post-discharge follow-up, tumor markers demonstrated improvement compared to the pre-admission levels.

This case is an example of sarcoidosis with multisystem pathologic changes likely leading to overall patient decompensation. Altered mentation improved with high dose glucocorticoids suggesting acute flare of neurosarcoidosis, although definitive diagnosis cannot be made. In presumed neurosarcoidosis Zajicek criteria may be utilized, although alternative causes for altered mentation should always be considered. There have been minimal randomized trials to support evidence-based treatment for acute flares and thus multidisciplinary case-based approach should be utilized.

## 2) REACTIVE ARTHRITIS PRESENTING AS ACUTE UNILATERAL VISION LOSS

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**Introduction:** Reactive arthritis typically occurs in young adults and presents with a classic triad of urethritis, conjunctivitis, and arthritis. It is frequently associated with the HLA-B27 allele and often presents 1-6 weeks following gastrointestinal or urogenital infections. Here we discuss a case of reactive arthritis presenting as acute unilateral vision loss.

**Case Description:** An 18-year-old male with no significant medical history presented with vision loss in his left eye (OS) for two weeks duration. Symptoms began two months prior with frequent urination, dysuria, hematuria, and lower abdominal pain. Following no relief with antibiotics for a presumed UTI, he had a kidney biopsy and was diagnosed with eosinophilic cystitis. Multiple symptoms began one month later including weight loss, low grade fevers, decrease in appetite, and fatigue as well as bilateral eye redness, pain, and blurry vision. He was started on prednisolone drops with the onset of vision loss and had improvement in his eye redness but did not regain visual acuity. The patient did not report any recent infections preceding his symptoms. The patient presented to the ED following recommendation by an ophthalmologist for systematic work-up. Labs were notable for leukocytosis ( $16k/\bar{1}/4L$ ), thrombocytosis ( $412k/uL$ ), anemia ( $11.9\text{ g/dL}$ ), elevated ESR ( $65\text{ mm/h}$ ) and elevated CRP ( $8.94\text{ mg/dL}$ ). Urinalysis was significant for elevated protein, leukocyte esterase, WBC, RBC, many bacteria, and WBC clumps. IV ceftriaxone was started for suspected UTI. Physical exam was notable for minimally reactive pupil OS and new heterochromia. The patient had right knee pain and swelling without erythema, and tenderness to palpation of the lateral left malleolus. A salmon-pink migratory rash was visualized over the chest, back, and shoulders. Ophthalmology and rheumatology were consulted. Visual acuity was 20/20 OD and hand motion at 3 feet OS. Exam was notable for relative afferent pupillary defect, posterior synechiae, lens pigment, and vitreous haze OS. Recommendations included starting cyclopentolate OD and continuing prednisolone in both eyes (OU). The patient was also started on prednisone. The patient had an extensive work-up for autoimmune and infectious processes. Lysozyme and urine beta-2 microglobulin were elevated; HLA-B27 and lupus anticoagulant were positive. MRI of the brain/orbit revealed an abnormal left globe with findings consistent with uveitis. Urine cultures since onset of symptoms were negative and antibiotics were discontinued. Kidney biopsy was unremarkable. The patient was diagnosed with reactive arthritis, presenting in an unusual manner of acute unilateral vision loss. He was discharged on day nine of admission after symptomatic improvement on prednisone, valacyclovir, prednisolone OU, and cyclopentolate OS. He has since regained visual acuity to 20/20 OS.

**Discussion:** This is an unusual presentation of reactive arthritis, as there was no preceding infection. Common ocular symptoms include conjunctivitis (35%) and iritis (5%). Unilateral decrease in visual acuity, as seen with this patient, is not typical. The patient also presented with symptoms of cystitis, rather than the more common finding of urethritis. Reactive arthritis can rarely present with severely decreased visual acuity. Follow-up with ophthalmology and rheumatology is critical for favorable visual prognosis.



### 3) SAPHO SYNDROME PRESENTING AS SHORTNESS OF BREATH

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**Introduction:** Synovitis Acne Pustulosis Hyperostosis Osteitis (SAPHO) syndrome typically occurs in children and young to middle-aged adults with a female predominance. It is a rare condition with an estimated worldwide prevalence of 40 per 100,000 people, likely underdiagnosed. Symptoms include debilitating pain that is worsened with movement or pressure and palmoplantar pustulosis. Here we present a case of SAPHO syndrome presenting as shortness of breath.

**Case Description:** A 51-year-old female with medical history significant for multiple sclerosis, SAPHO syndrome, fibromyalgia and hypertension presented to the ED with shortness of breath, chest pain, acute on chronic pain in bilateral legs, feet, shoulders, and lower back, and urinary retention. Two months prior, she was admitted for generalized pain and started on a prednisone taper and pregabalin 75mg BID as well as continuing her prior regimen of baclofen 5mg TID and tizanidine 8mg TID. She had notably run out of her medications a month prior to her current presentation. The patient presented to the ED with tachycardia of 125 bpm and hypertension to 167/100. Work-up was notable for leukocytosis (18,300/ $\hat{1}/4$ L), hemoglobin (10.3 g/dL), and hypokalemia (2.8 mEq/L). Physical exam was notable for pustules on bilateral legs, a four-inch by two-inch erythematous wound without drainage on the posterior lower left extremity, and purulent drainage from the pannus and axilla. Medication regimen per last admission was restarted. The differential included pneumonia given leukocytosis and chest x-ray revealing a consolidation at the right lung base with hazy opacities at the left lung base. The patient was started on azithromycin 500mg IV and ceftriaxone 2g IV. However, leukocytosis was determined to be chronic (17,200/ $\hat{1}/4$ L at last admission), and CT chest was more consistent with right middle and lower lobe atelectasis, so antibiotics were discontinued. Shortness of breath was attributed to chest pain caused by SAPHO. On the second day of admission, the patient endorsed increasing pain and erythema from the left lower extremity wound. Infectious disease was consulted and vancomycin 2.25g IV was started. Rheumatology was consulted for management of SAPHO syndrome and fibromyalgia, and the patient was started on a prednisone taper. The next day, dermatology was consulted for hidradenitis suppurativa and recommended starting the patient on doxycycline 100mg BID at discharge following completion of inpatient antibiotics. The patient began spontaneously voiding, and urinary retention resolved. CT left lower extremity did not show an abscess, and the patient was transitioned to cephalexin 500mg QID for skin and soft tissue infection coverage, completed prior to discharge.

**Discussion:** SAPHO syndrome is a rare disorder with unknown etiology, theorized to be a combination of genetic, infectious, and immunological factors. Patients with the syndrome often present with arthritis, most often affecting the anterior chest wall (up to 96% of cases). Flare timing is highly variable ranging from weeks to years with presentation of rheumatologic and dermatologic symptoms. SAPHO syndrome can be complicated by presentation of shortness of breath secondary to chest pain. Follow-up is critical to ensure appropriate management of arthritic and cutaneous manifestations.

## 4) A CASE OF CMV COLITIS IN AN IMMUNOCOMPETENT HOST

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**Introduction:** Cytomegalovirus is a DNA virus that is prevalent in a majority of the population, but remains asymptomatic in the immunocompetent population. It can present as colitis amongst other clinical manifestations in immunosuppressed patients. Here, we present a rare case on an immunocompetent individual.

**Case Presentation:** A 76-year-old female with a history of an incarcerated hernia, *Clostridium difficile* colitis, hypertension, and dyslipidemia presented to the emergency department (ED) with bloody diarrhea and weakness. One month prior, patient was seen by GI for epigastric pain and hematochezia where she was diagnosed with gastritis and candidal esophagitis. An X-ray obtained at the time showed a high stool burden for which she underwent a Miralax cleanse, as recommended by GI.

On admission, the patient denied fevers, chills, or cough. A colonoscopy revealed severe Cytomegalovirus (CMV) colitis in the rectum. Her CBC was significant for a low neutrophil (30%) and high lymphocyte differential (59%). Additional symptoms include self-limited hyponatremia (133 mmol/L), likely due to excessive diarrhea, bleeding internal hemorrhoids with discomfort, treated with anusol-HC, and worsening postprandial abdominal pain. On hospital day (HD) 10, patient was discharged on a six-week course of Valganciclovir. Immunology work up confirmed a positive CMV IgG, along with a negative HIV screen and CD4 count (885 cell/mm<sup>3</sup>), IgA, IgM, and IgG within normal limits.

At a GI follow-up upon completion of antiviral therapy, the patient reported postprandial fecal urgency and worsening diarrhea. CBC showed Hgb of 10.4 g/dL, but was otherwise unremarkable. Two weeks later, patient presented to the ED for abdominal pain and shortness of breath and quickly decompensated. She reported new-onset lower quadrant cramping pain and watery stools. Bronchoalveolar lavage revealed ground-glass opacities throughout. Labs were significant for low hemoglobin (10.6 g/uL), normal alkaline phosphatase, low albumin (2.6 g/dL), low creatinine (0.35 g/dL), mild hypocalcemia (8.0 mg/dL), and an elevated BNP (2000 pg/mL). CT chest and TTE were positive for fibrotic changes and a newly reduced EF of 33%, which along with wall motion abnormalities were suggestive of stress cardiomyopathy. Her course was also complicated by CT findings of pancolitis. Although she required intubation and ICU care, the family elected for inpatient hospice and comfort care. Patient died a few days later.

**Discussion:** This case aims to draw attention to the rare presentation of colitis in an immunocompetent patient and encourage clinicians to recognize important risk factors. CMV takes a more aggressive approach in immunocompromised individuals by causing hepatitis, retinitis, esophagitis, and colitis.

40-100% of the world's population is estimated to be seropositive for CMV. In patients with severe colitis, CMV reactivation appears to be the etiology in 4.5 -16%. Of the 32% of people who died, all were older than the age of 55. There is insufficient research regarding the effectiveness of antiviral agents in treating CMV colitis in terms of outcome.

**Conclusion:** The aim of this report is to draw attention to the rare presentation of colitis in an immunocompetent patient and encourage clinicians to recognize important risk factors.

## 5) OPTIMIZING INPATIENT PATIENT EXPERIENCE

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**Background:** The efficacy of a hospital is often dependent on the admitted patients experiences with different practitioners. These experiences factor into the patients likelihood to refer the provider to other potential patrons. When patient satisfaction is low, it is reflected in the percentage of the likelihood to refer. A below-average score can indicate a need to address departmental practices and potentially change how medical personnel interact with their patients. A cross-sectional study by Leow and Liew noted that the length of time a physician spends with their patient is one of the strongest determinants for patient satisfaction. At Froedtert Hospital, the 9NT floor continuously reported a likelihood to refer score between 50-67%, with 76% being the desired goal. Patients are likely to refer a provider when they feel heard and included in the decision-making process. The objective of this study is improving providers scores and the communication between practitioners and their patients.

**Method:** Three focused intervention tactics were developed to target patient satisfaction improvement on 9NT. Physicians will press the Provider in room button on the Raulands panel when entering a patients room and this also alerts the bedside nurse to come into the room. The physician will then discuss the plan of care (POC) with the patient and nurse, utilizing this time to address any questions or concerns intentionally focused on shared decision making and collaboration. Secondly, the provider should update the whiteboard with the patients POC for the day and the expected discharge date and place. Lastly, at the end of the day, the doctor will re-connect with the patient either in-person or via the patients in-room phone. During this time, the doctor will share potential POC updates and ask if any changes occurred and if they can assist with anything before departing for the day.

**Results:** Preceding the study, the likelihood to refer percentage for 9NT consistently remained below 67%. Within the first month of implementation of this pilot project, this rate increased to 75%. Throughout the span of the study, the likelihood to refer for 9NT reached 78%, surpassing the desired target.

**Conclusion:** With three targeted intervention tactics, an increased likelihood to refer percentage demonstrates improved patient satisfaction. Based on the successful pilot project on 9NT, we are planning to implement this on all medicine units at Froedtert Hospital. This initiative will enhance the efficiency of the institution, improve patient retention, and foster trusting relationships between patients and their medical care team.

## 6) A RARE CASE OF INVASIVE ANTIBIOTIC RESISTANT STREPTOCOCCAL PNEUMONIAE

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**Introduction:** Streptococcal Pneumoniae can cause serious infections of otitis media, pneumonia, bacteremia, and meningitis especially in the elderly, young, and immunocompromised patient populations. While the rates of *S. pneumoniae* have decreased over the years due to the introduction of conjugate vaccines, more recently there has been increasing rates of antibiotic resistant *S. pneumoniae*. This poses a threat for more severe infections, especially in the vulnerable populations. Invasive *S. pneumoniae* is a reportable infection to the CDC and in 2014 WHO published a report noting *S. pneumoniae* one of the top 9 global bacteria of international concern. This case highlights a unique scenario of a previously healthy adult who presented with an invasive resistant *S. pneumoniae* infection.

**Case Description:** A previously healthy 54 year old male was in his usual state of health until 8 weeks prior to presentation, when he developed bilateral otitis media and sinusitis. This was treated with two courses of antibiotics, cefpodoxime and doxycycline, with only partial relief. He then developed right ankle pain and swelling that was initially treated as gout, but then presented to the ED when this failed to improve. In the ED his temp of 102.1F, HR of 99bpm, and WBC 20.1 K/uL with PMN predominance, consistent with sepsis. He was started on aztreonam, vancomycin, and metronidazole for presumed cellulitis. On hospital day two, blood cultures grew *Streptococcus pneumoniae* resistant to penicillin (MIC 2 mcg/ml) and intermediate to ceftriaxone (MIC 1 mcg/ml). CT of the sinuses showed pansinusitis and bilateral mastoid effusions, and TTE was negative for endocarditis. Clinical exam and MRI head was negative for any evidence of meningitis. His ankle continued to have pain and tenderness, and MRI of the foot and ankle was concerning for septic arthritis, tenosynovitis, and early osteomyelitis. Tendon sheath aspiration showed > 80K cells/ml, with PMN predominance, and negative for crystals. The patient was taken to the OR for I&D of the right tibiotalar joint, peroneal and ankle flexor tendons. OR cultures were negative but bacterial 16s was positive for *Streptococcal pneumoniae*. A PICC line was placed, and he was transitioned to IV ceftriaxone 2g BID. During the hospital stay, his leukocytosis became lymphocyte predominant, suggestive of a lymphoproliferative disorder. Flow cytometry showed a low-grade B cell neoplasm, likely CLL. IgG and IgA levels were normal, but IgM reduced at 10 mg/dL. Further hematologic/oncologic workup is ongoing.

**Discussion:** Invasive Streptococcal pneumoniae infections are uncommon in the age of conjugate vaccines. Our case demonstrates infection in a previously healthy individual, in which immunosuppression from hematologic malignancy and antibiotic resistance likely contributed to his presentation.

## 7) HYPERCALCEMIA OF MALIGNANCY IN A PATIENT WITH SQUAMOUS CELL CARCINOMA

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Hypercalcemia is defined as a serum calcium concentration greater than 10.5mg/dl. Hypercalcemia can be further classified as mild with serum calcium concentrations between 10.5mg/dl- 12mg/dl, moderate with serum calcium concentrations between 12.1mg/dl-14mg/dl, and severe with calcium concentrations greater 14.1mg/dl. While hypercalcemia can be caused by a wide variety of underlying etiologies, up to 90% of cases are caused by primary hyperparathyroidism or malignancy<sup>2</sup>. In fact, some studies suggest that up to 20% of patients with cancer will develop hypercalcemia<sup>3</sup>. Hypercalcemia of malignancy can be caused by four unique underlying mechanisms which lead to a shared outcome of causing increased osteoclast-mediated bone resorption<sup>4</sup>. Humoral hypercalcemia of malignancy, which is characterized by the secretion of parathyroid-related-protein (PTHrp) is the most common mechanism and is implicated in approximately 80% of cases of hypercalcemia of malignancy.

Here we present a 79 year old male with a past medical history significant for hypertension and hypothyroidism who presented complaining of weakness. The patient's son reported that the patient had become progressively more fatigued and confused over the past 7 days. Three weeks prior to admission, the patient's PCP had noted a large mass on his lateral neck and recommended imaging and biopsy. The patient denied any pain, fevers, chills, headache, chest pain, shortness of breath, nausea, or vomiting. On admission, the patient was hemodynamically stable. Labs were significant for corrected calcium of 12.1, ionized calcium of 1.59, PTH of 6.7, PTHrp of 18 and 25-hydroxyvitamin D3 of 105. CT performed prior to admission demonstrated a large locally infiltrative mass of the left neck that partially encased the left common carotid. Additionally, pathologic right level 2 lymph nodes were also noted. However, CT demonstrated no evidence of intrathoracic disease. Given the concern for malignancy, ultrasound guided biopsy of the lesion was performed which demonstrated squamous cell carcinoma (SCC). Tumor morphology and immunoprofile favored metastatic HPV-associated SCC originating from the oropharynx. Endocrinology was consulted and recommended serum and urine electrophoresis, as well as fluid resuscitation and to discontinue calcium and vitamin D supplements. On hospital day 2, the patient's corrected calcium improved to 11.8 with continuous fluid replacement although his ionized calcium remained elevated at 1.58. The patient was discharged but was unfortunately readmitted 5 days later with altered mental status and a critical lab value with corrected calcium of 12.6. Endocrine then recommended calcitonin and a dose of zoledronic acid. Corrected calcium improved to 9 and he was able to start cancer treatment soon after.

In this case, endocrinology focused on IV fluids for calciuresis. However, since the cancer was not being treated immediately after discharge, he required readmission for calcitonin and zoledronic acid. Ultimately, the only curative treatment for his condition will be treatment of the cancer. This case highlights the importance of efficient, comprehensive cancer care and involvement of multiple specialties. “

## 8) SEVERE CELLULITIS IN A PATIENT WITH PYODERMA GANGRENOSUM

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Cellulitis is an acute infection of the deep dermis and subcutaneous tissues that commonly presents with erythema, warmth, swelling and pain. Classically, cellulitis is caused by gram positive cocci with *Streptococcus pyogenes* and *Staphylococcus aureus* being the predominant bacteria implicated<sup>1</sup>. Various conditions, including neutropenia, liver cirrhosis, cat/dog bites, fresh/saltwater exposure and diabetic foot infections can predispose patients to acquiring cellulitis due to atypical pathogens<sup>2,3</sup>. Establishing a diagnosis requires clinicians to rely on history and physical exam as there is a lack of reliable diagnostic tests. The diagnosis of cellulitis can be further complicated in patients with preexisting dermatologic mimics or other medical conditions including pyoderma gangrenosum, venous stasis dermatitis, lipodermatosclerosis, lymphedema, gout, erythema migrans and contact dermatitis<sup>2,4</sup>. A high degree of clinical suspicion must be maintained for diagnosing cellulitis when examining patients with dermatological mimics because a delayed diagnosis is associated with significant morbidity and mortality.

Here we present a 51-year-old female with a history of systemic lupus erythematosus and pyoderma gangrenosum with recurrent cadaveric skin grafts on her left calf who was also on infliximab who was admitted with three-day history of left extremity edema extending across her left medial thigh. Of note, the patient's left thigh had previously been used as a donor site for one of the split thickness skin grafts to her left calf. On presentation she reported severe pain in left leg, fever and malaise. On examination the patient's left thigh was exquisitely tender, erythematous and warm to the touch. The patient's graft site on her left calf was intact with no gross drainage or purulence. Labs were significant for WBC count of 13,400/ $\mu$ L. She was started on cefepime and linezolid as previous cultures had grown pseudomonas and MRSA. She developed worsening leukocytosis, recurrent fevers and severe pain so infectious disease was consulted who believed this was a case of severe cellulitis which was slow to respond. CT of left femur showed subcutaneous edema with dermal thickening but no abscess. Culture of the site grew *Streptococcus dysgalactiae*, MRSA and *Pseudomonas*. She was discharged on hospital day nine with a fourteen-day course of cefepime and linezolid. Four days after discharge she returned to clinic reporting resolution of symptoms.

This case illustrates the importance of maintaining a high degree of clinical suspicion for cellulitis when examining patients with dermatologic mimics. More specifically, this patient's established diagnosis of pyoderma gangrenosum, as well as her recurrent skin grafts to her lower left extremity, made establishing a diagnosis much more difficult. This patient's relatively slow response to IV antibiotics also called into question the diagnosis of cellulitis. Additionally, the patient had been receiving infliximab, which possibly made her more susceptible to atypical pathogens including pseudomonas. Around 7% of patients with cellulitis require hospitalization and risk factors for developing severe infection include old age, recent antibiotic use, immunosuppression including infliximab, and having sites of inoculation such as this patient's skin graft<sup>5</sup>. “

## **9) THE PROTEASE INHIBITOR AMPRENAVIR PROTECTS AGAINST PEPSIN-INDUCED ESOPHAGEAL EPITHELIAL BARRIER DISRUPTION AND CANCER-ASSOCIATED CHANGES**

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Gastroesophageal reflux disease (GERD) significantly impacts patient quality of life and is a major risk factor for the development of Barrett's esophagus (BE) and esophageal adenocarcinoma (EAC). Proton pump inhibitors (PPIs) are the standard-of-care for GERD and are among the most prescribed drugs in the world, but do not protect against nonacid components of reflux such as pepsin, or prevent reflux-associated carcinogenesis. We recently identified an HIV protease inhibitor amprenavir that inhibits pepsin and demonstrated the antireflux therapeutic potential of its prodrug fosamprenavir in a mouse model of laryngopharyngeal reflux. In this study, we assessed the capacity of amprenavir to protect against esophageal epithelial barrier disruption in vitro and related molecular events, E-cadherin cleavage, and matrix metalloproteinase induction, which are associated with GERD severity and esophageal cancer. Herein, weakly acidified pepsin (though not acid alone) caused cell dissociation accompanied by regulated intramembrane proteolysis of E-cadherin. Soluble E-cadherin responsive matrix metalloproteinases (MMPs) were transcriptionally upregulated 24 h post-treatment. Amprenavir, at serum concentrations achievable given the manufacturer-recommended dose of fosamprenavir, protected against pepsin-induced cell dissociation, E-cadherin cleavage, and MMP induction. These results support a potential therapeutic role for amprenavir in GERD recalcitrant to PPI therapy and for preventing GERD-associated neoplastic changes.

## 10) ULCERATION WITHOUT EXCESSIVE DEFECATION - CROHN'S DISEASE ISOLATED TO THE ORAL CAVITY

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**Introduction:** Crohn's disease is a chronic inflammatory bowel disease that affects the GI tract from the mouth to the anus. Less than 5% of cases have oral to mid-ileal involvement, and isolated oral Crohn's disease (OCD) is especially rare [1]. OCD can also be difficult to distinguish from orofacial granulomatosis (OFG) [1, 2]. Oral lesions can present years before intestinal manifestations, but in some patients, it may be the only symptom. We present a case of isolated oral Crohn's disease complicated by irritable bowel syndrome.

**Case Presentation:** A 36-year-old female with a history of anxiety presented with ten months of recurrent ulcers on the tongue, the insides of the lip, roof of the mouth, and along the gum line. She reported painful, bleeding sores lasting two weeks at a time and painful gum inflammation, but denied joint pain, rashes, nasal lesions, eye pain/dryness, and vaginal dryness. The patient was seen by a dentist and found no improvement with various mouthwashes. A periodontist performed a biopsy that demonstrated chronic granulomatous inflammation. Outside gastroenterology and rheumatology workup was negative for intestinal Crohn's disease, tuberculosis, Bechet's disease, sarcoidosis, granulomatosis with polyangiitis, and other stomatitis causing conditions. The ulcerations resolved on a prednisone taper but returned a week after the taper ended. When she presented to our clinic, she was having one formed bowel movement per day without blood, mucus, nocturnal awakenings, urgency, weight loss, or abdominal pain. Aphthous ulcers were noted only on the inner upper lip. The patient had had two colonoscopies and one upper endoscopy with gastric, duodenal, ileal and colonic biopsies that were unremarkable. Additionally, a magnetic resonance enterography (MRE) showed no evidence of small bowel inflammation. Given the biopsy of the patient's oral ulcers was consistent with chronic granulomatous inflammation which responded to steroid therapy, we made the diagnosis of isolated oral Crohn's disease. She started on Stelara every 8 weeks. Four months later, the patient's oral lesions and gum inflammation had completely resolved on Stelara, and the medication was continued.

**Discussion:** Isolated oral Crohn's disease is exceedingly rare, but non-caseating granulomas on oral biopsy confirmed the diagnosis. Oral involvement is seen in 0.5-32% of adults with intestinal Crohn's disease and may be the initial presentation in 5-10% [3, 4]. Symptoms include firm swelling of the lips, cobblestoning of buccal mucosa, linear ulcerations in the buccal vestibule or aphthous ulcers and gingivitis [5]. These features can also be seen in many infections or granulomatous diseases and clinicians must have a low threshold to biopsy. One such condition is orofacial granulomatosis (OFG), which describes patients with granulomatous oral ulcerations in the absence of clinical intestinal disease [1, 2, 5]. However, patients with OFG have developed IBD and there is ongoing debate about whether OFG is simply an oral manifestation of Crohn's disease or its own separate entity [1, 5].



## 11) VALACYCLOVIR-INDUCED NEUROTOXICITY IN ESRD - RARE BUT PREVENTABLE SIDE EFFECT

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**Introduction:** Valacyclovir is the preferred treatment of HSV-1, HSV-2 and VZV. It is generally well-tolerated but associated with rare CNS adverse reactions such as agitation, hallucinations and confusion, especially without a renally adjusted dose [1]. We present a case of valacyclovir-associated neurotoxicity (VAN) in a patient with ESRD and recurrent HSV-2.

**Case Presentation:** A 56-year-old woman with a history of ESRD on hemodialysis presented with acute on subacute altered mental status. The patient was prescribed valacyclovir at the standard dose of 500 mg twice daily for 3 days for recurrent genital herpes. She presented after 3 doses with headache, vomiting, abdominal pain, dizziness, tingling in the extremities, hallucinations and decreased ability to walk. On exam, there were no focal neurological deficits and radiography of the head (CT, MRI, MR angiogram) was unremarkable. She had exceeded the recommended ESRD-adjusted maximum dose of 500 mg daily for 3 days and her symptoms were suspected to be valacyclovir side effects. The offending drug was stopped and she was discharged. Three days later, she presented with worsening mental status, myoclonus and unintelligible speech. She missed dialysis the day before due to confusion. Vitals signs were within normal limits and labs indicated hyperkalemia (6.4 mEq/L), elevated creatinine (15.21) and anion gap metabolic acidosis. CT abdomen and pelvis were unremarkable. The patient was admitted for valacyclovir-induced encephalopathy with a course complicated by decreased oral intake and became nonverbal. She received hemodialysis for 3 consecutive days with improvement in mentation after 2 sessions. On the third morning, she was alert and oriented with pleasant and logical speech. The patient was discharged home after 5 days of hospitalization with a complete resolution of symptoms.

**Discussion:** Valacyclovir, converted to acyclovir in vivo, is the preferred treatment for HSV and is 89% renally cleared as acyclovir. In patients with ESRD, the half-life of valacyclovir increases from 3 to 14 hours [2]. The standard dose for a recurrent episode of genital HSV is 500 mg twice a day for 3 days, however, in a patient with a creatinine clearance under 10 ml/min/1.73 m<sup>2</sup>, the dose is reduced to 500 mg daily. Our patient had ESRD and a creatinine clearance of 4.6 ml/min, which should have placed her at 500 mg daily, yet she was prescribed the standard dosing. A hemodialysis session removes 33% of the drug and our patient had missed dialysis after onset of altered mental status, exacerbating her systemic accumulation of valacyclovir. Impairment of consciousness is reported to develop within 24-48 hours after peak serum concentration [1]. Our patient likely had VAN on her first presentation to the ED and should have been admitted to undergo dialysis. Neurotoxicity is best managed with hemodialysis which rapidly shortens the neurotoxicity period, and most patients have a complete resolution of symptoms in 2-7 days [2]. This case demonstrates that patients with ESRD are particularly susceptible to valacyclovir neurotoxicity and highlights the importance of renally adjusted doses and immediate treatment with hemodialysis if neurotoxicity is severe.

## 12) CHOLANGIOCARCINOMA MIMICKING POORLY DIFFERENTIATED MULLERIAN ADENOCARCINOMA

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**Introduction:** Intrahepatic cholangiocarcinoma (iCCA) is a bile duct malignancy that frequently spreads to regional lymph nodes, liver, and lungs. Although uncommon, it can also metastasize to the bone. iCCA is often advanced at diagnosis, making it extremely lethal.

**Case Presentation:** A 61-year-old female with a past medical history of hypertension, hyperlipidemia, diverticulosis, endometriosis, and back pain presented with hypercalcemia prior to her T6 and T7 laminectomy surgery. Chest, rib, and back pain started four months before surgery. X-rays showed compression fracture of T7. MRI spine showed a destructive soft tissue lytic lesion throughout T6 and T7. CT showed innumerable hepatic metastases, including a dominant 9 cm mass in the left hepatic lobe, pulmonary nodules measuring up to 9 mm, and a 6.5 cm solid mass abutting posterior uterus suspicious for primary ovarian neoplasm. The patient's hypercalcemia was treated with IV fluids and surgery was performed without complication. However, the hospital course was complicated by pulmonary embolism and fever. She was discharged 12 days post-surgery on enoxaparin 80 mg twice daily.

At oncology follow up, she was diagnosed with stage IVB adenocarcinoma of unspecified Mullerian origin. She started neoadjuvant chemotherapy with carboplatin AUC 6 and paclitaxel 175 mg/m<sup>2</sup> every 21 days followed by interval debulking, and five treatments of palliative radiation therapy to thoracic spine. In addition, Caris molecular testing was requested at this time.

Caris indicated FGFR2 fusion and BAP1. She was diagnosed with iCCA. CT revealed enormous multifocal cholangiocarcinoma with increasing retroperitoneal lymphadenopathy. She started gemcitabine 1800 mg and cisplatin 45 mg weekly, durvalumab 10mg/kg every two weeks, pegfilgrastim 6 mg every other week, and zoledronic acid 4 mg.

Three months after surgery, she was admitted for refractory hypercalcemia. On admission, her calcium was 13.9 mg/dL and was treated with 270 units of calcitonin and aggressive hydration. Calcium improved to 9.8 mg/dl at time of discharge. Additionally, her PTHrP level was elevated at 14 pmol/L and was given zoledronic acid 4 mg. CT showed disease progression with enlarging solid pulmonary nodule and a more conspicuous splenic lesion. She was discharged with instructions to follow up with oncology, where she stopped gemcitabine-cisplatin and started on futibatinib 20 mg daily.

**Discussion:** CCA metastasis to the bone is rare and is often mistaken for other forms of cancer. Our patient was initially diagnosed with Mullerian adenocarcinoma. Similarly, another case of a 61-year-old female with five months of right scapular pain due to osseous destruction was mistaken as osteosarcoma. In both cases, CCA mimicked destructive bone cancers making for a difficult diagnosis. Our patient was diagnosed with iCCA three months after seeking treatment, specifically when a molecular test revealed FGFR2 fusion and BAP1. Multiple genomic alterations have been identified in CCA, including FGFR2, allowing for target therapy which could be more effective with an early and accurate diagnosis. This case highlights the ongoing relevance of molecular testing in accurate diagnosis of an advanced malignancy. Furthermore, it underscores the importance for clinicians to be aware of various overlapping complications of different malignancies.

### 13) COGNITIVE IMPAIRMENTS AFTER STROKE HAVE A GREATER ASSOCIATION WITH T2 WHITE MATTER HYPERINTENSITY VOLUMES THAN ACUTE ISCHEMIC LESION VOLUMES

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**Background:** Post-stroke dementia is characterized by the deterioration of cognitive functioning and reduction in activities of daily living following stroke onset. Prior studies have shown that if cognitive impairments are identified in the acute phase of stroke, there may be clinical opportunity for specific preventive and therapeutic treatment. White matter hyperintensity lesions have been shown to be associated with these cognitive processes, creating a possible avenue of diagnostic utility. Data correlating this neuroanatomical marker with specific neuropsychological clinical tests is in need of more research.

**Methods:** Early-stage ischemic stroke patients were selected from a longitudinal study while age- and gender-matched healthy normal controls were recruited from the campus community. To examine the correlation of imaging markers with neuropsychological indices, a neuropsychological battery of various cognitive measures was obtained from all subjects. This included cognitive and affective measures such as MMSE, Trail Making Test A/B, Digit Span, Digit Symbol Coding, Hopkins Verbal Learning Test, Brief Visuospatial Memory Test, and CES-Depression assessments. T2 FLAIR imaging data was then acquired from all subjects and T2 lesion segmentations were calculated using Jim software. Acute ischemic lesion data was obtained by delineating areas with both hyperintensities on DWI data and hypointensities on ADC maps. White matter lesion volumes and acute stroke lesion volumes were quantified and compared to cognitive performance tests via regression analysis.

**Results:** T2 white matter hyperintensity lesion volume was associated with cognitive deficits in stroke patients, specifically in areas of processing speed (Trail A) [R2 .471, p-value .009], executive function (Trail B) [R2 .450, p-value .012 and R2 .571, p-value .003], delayed recall (BVMT) [R2 .659, p-value .0004], and retention (BVMT) [R2 .582, p-value .002]. Acute ischemic lesion volume was only correlated to executive function (Trail B) [R2 .395, p-value .038] among all cognitive tests.

**Conclusions:** Our study expands on prior knowledge of the association between T2 white matter hyperintensity lesion volume and cognitive deficits in stroke patients by correlating its relationship with various clinical processes. Specifically, areas of processing speed (Trail A), executive function (Trail B), delayed recall (BVMT), and retention (BVMT) were heavily associated with white matter lesions. In our analysis of acute ischemic lesion volume, we found that there was only significant correlation to the Trail B Test, indicating that this neuroimaging marker may show less clinical utility when compared to T2 hyperintensity volume.

Our overall data suggests neuroimaging can be used as a predictor of various aspects of cognitive performance in acute stroke patients. These associations are consistent with prior studies showing correlations between white matter lesions and mental processing. Further research will be needed to reproduce these correlations of lesion size with specific clinical deficits as well as to assess the utility of these neuroimaging markers on clinical practice.”

## 14) EVALUATING THE ABILITY OF CT PERFUSION METRICS TO DIFFERENTIATE ACUTE STROKE FROM OTHER NEUROLOGIC CONDITIONS

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**Introduction:** Perfusion metrics on computed tomography (CT) scans have long been a tool used for diagnosis and prognosis of stroke and other neurologic disorders. Implementation of perfusion data in acute stroke care allows individualized treatment to be based on cerebrovascular tissue condition rather than a group-based time-dependent treatment. Further research is needed to analyze specifications of perfusion data and how they may be useful clinically. Cerebral blood flow (CBF) volume  $<30\%$  is representative of an infarct core, while  $T_{max} >6.0s$  represents total hypoperfused tissue. Mismatch volume is calculated as the difference between these two values and is a surrogate marker for the relevant volume of salvageable penumbral brain tissue. Our study aims to assess the ability of CBF  $<30\%$  and mismatch volume to lead clinicians to a diagnosis of ischemic stroke versus other etiologies of neurologic deficits, such as toxic metabolic encephalopathy, migraines, seizures, tumors, delirium, or dementia.

**Methods:** Image data was collected from patients with concerns of acute stroke who presented to UW Health's Emergency Department between January 1, 2020 and December 21, 2021 ( $n=771$ ). Perfusion metrics, including CBF  $<30\%$  and  $T_{max} >6.0s$ , were obtained from CT imaging either through automation or a board-certified radiologist, with mismatch data then being calculated from these two markers. Non-zero values of CBF  $<30\%$  and mismatch volume were split into 8 groups based on severity. The neurology-relevant clinical discharge diagnosis was also collected through reviewing patient health records. A Pearson correlation coefficient was then calculated by comparing CBF  $<30\%$  and mismatch volume averages in each group to the percentage of associated patients who had clinically diagnosed ischemic or hemorrhagic stroke.

**Results:** Results of the Pearson correlation indicated that there was a significant large positive relationship between CBF volume  $<30\%$  and stroke etiology ( $r(6) = .73$ ,  $p = .040$ ). However, for the mismatch perfusion data, it showed there was a non-significant and only very small positive relationship to stroke etiology, ( $r(6) = .403$ ,  $p = .322$ ).

**Discussion and Conclusions:** Our study continues to add to the literature on how perfusion metrics may have diagnostic value in acute stroke patients. The correlation between CBF volume  $<30\%$  and stroke etiology aligns with prior studies on the predictability of core infarct volume on stroke. Although there was a suspected positive relationship between mismatch perfusion data and stroke etiology, we cannot conclude that the correlation was significant through this study alone. More studies of various types of imaging modalities will be needed to further delineate the use of perfusion metrics in acute stroke.

## 15) TROPICAL MYOSITIS: A NOT-SO-TROPICAL DIAGNOSIS IN A FEBRILE TYPE 1 DIABETIC PATIENT

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**Introduction:** Tropical myositis “also known as pyomyositis” is a subacute, primary infection of skeletal muscle. Long considered a diagnosis exclusive to tropical climates, it has been recently increasingly reported in historically non-tropical climates. We present an interesting case of tropical myositis in Madison, Wisconsin occurring in a febrile type I diabetic without travel or known exposure.

**Case:** A 35-year-old male with history of von Willebrand disease, type 1 diabetes, and financial insecurity resulting in insulin rationing presented with two weeks of generalized weakness. On arrival, he endorsed dizziness, polyuria, and polydipsia. He was febrile and tachycardic. On exam, the patient had a multitude of large, erythematous bumps across his body, which had been increasing in size for more than two weeks. The patient was found to have a blood glucose of 518 with leukocytosis and labs supportive of diabetic ketoacidosis (DKA). CT imaging revealed extensive intramuscular and subcutaneous abscesses of the left chest, bilateral erector spinae, right gluteal muscles, bilateral thighs, left leg, and left upper and lower arm. Broad-spectrum antibiotics were initiated, as was treatment for DKA. Blood and urine cultures revealed oxacillin-susceptible staph aureus. After clinical stabilization, the patient underwent initial incision and drainage (I&D) of his abscesses on hospital day 3. Many of the abscesses required fasciotomies to adequately drain. The patient’s condition would require 14 more operative I&D’s and wound closure attempts. The patient was discharged to a rehab facility after more than a month-long hospitalization.

**Discussion:** Severe tropical myositis is associated with high morbidity and high use of healthcare resources. The exponential rise in cases within the United States in recent years risks further stressing an already-burdened healthcare system. We explore potential causes of the increase in cases of tropical myositis in non-tropical regions including increasing rates of poverty, increasing rates of diabetes, and even climate change. Recent data suggests that the large majority of tropical myositis cases are caused by PVL toxin-producing staph aureus strains. There is a theoretical mitigation of disease severity when patients receive early protein synthesis inhibitor antibiotic treatment, though this is limited to case reports and observational studies, lacking controlled clinical trials. This case highlights the need for early identification, antibiotic administration, and surgical source control in suspected cases of tropical myositis. This case was also an example of excellent multi-disciplinary teamwork, as general surgery, orthopedic surgery, infectious diseases worked together closely to care for this patient.

## 16) A CASE OF CMV IN IBD

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**Introduction:** Cytomegalovirus (CMV) is a common viral infection that belongs to the Herpesviridae family. CMV is a lifelong burden after initial infection and may be dormant in individuals for extended periods of time before reactivating from triggers such as immunosuppression or inflammation. Colonic involvement & ulceration is well known as a symptom of CMV, however, the appearance and qualities may vary which makes misdiagnosis more possible. Patients with inflammatory bowel disease are particularly susceptible to reactivation given the combination of bowel inflammation and usage of therapeutic immunosuppressants. Here we present a case of CMV colitis in a patient with IBD who presented in the setting of an acute illness.

**Case Description:** A 40-year-old male with a past medical history significant for Crohn's and Ulcerative Colitis status-post proctocolectomy on azathioprine presented to our hospital with 2 weeks of fatigue, fevers, and change in bowel habits. It's notable that history includes patient's young son having similar GI symptoms lasting approximately several days about 2 weeks prior to patient's presentation. Patient also endorsed drenching night sweats during this period which was consistent with cyclical fever that patient had overnight during admission. Initial presentation was concerning for viral syndrome versus IBD flare versus malignancy. There was no significant lymphadenopathy on CT scan which made lymphoma significantly less likely. Labs were significant for elevated CRP & ESR and normal fecal calprotectin nonetheless the GI IBD team was consulted and performed GI proctoscopy with biopsies, which was significant for improved cuffitis from prior scope as a single erosion along the anastomotic line.

Given cyclical fevers, additional workup was done including stool studies and CMV NAAT which came back as low positive with viremia at 594 copies. Azathioprine therapy was held indefinitely, per ID consult. Patient's symptoms improved over the 3-day hospitalization, and he requested discharge. In the days after, virology came back positive for parvovirus and biopsies of ulcers confirmed CMV.

On Follow up, 1-week CMV levels continued to be elevated with minimum improvement and treatment with valganciclovir was initiated which resulted in undetectable levels on further follow-up and his symptoms resolved during this time frame.

**Discussion:** CMV is common in individuals with colitis, with reports of up to 25% of those with a prior colectomy. The azathioprine therapy this individual was prescribed would further increase the probability of symptomatic reactivation due to immunosuppression. While it's impossible to determine if the CMV was present in the cuffitis initially, it appears likely given the lack of improvement and chronicity. It's also important to note that patient's recent illness with parvovirus may have caused an inflammatory response that also led to reactivation of CMV. The standard treatment for CMV colitis consists of antivirals such as ganciclovir and valganciclovir. This case highlights the importance of considering CMV as a cause of refractory ulcers in a patient with IBD. Early detection and treatment being quintessential to decreasing morbidity.

## 17) A PRESENTATION OF RARE HEIDENHAIN-VARIANT CREUTZFELDT-JAKOB DISEASE

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**Introduction:** Creutzfeldt-Jakob Disease (CJD) is a rare pathologic prion disease characterized by progressive neurodegeneration and death. Incidence is estimated at 1-2 cases per million individuals, with approximately 85-95% of cases arising sporadically. CJD most commonly presents with rapidly declining neuropsychiatric status, gait ataxia, and startle myoclonus. Visual hallucination preceding neuropsychiatric symptoms suggests the presence of the rare Heidenhain-variant CJD (HV-CJD).

**Case:** A 54-year-old female with a past medical history of alcohol abuse and mild anxiety was admitted for one month of progressive altered mental status preceded by visual hallucinations. Over that time period, her symptoms rapidly progressed to agitation, dementia, and personality change. Physical symptoms included left elbow rigidity, startle myoclonus, and gait ataxia. Laboratory workup was negative for thyroid dysfunction, infection, paraneoplastic syndrome, autoimmune encephalitis, inflammatory process, vitamin deficiency, heavy metals, drug toxicity, and metabolic derangement. Imaging workup was negative for acute process on CT of the head, CT of the abdomen and pelvis, and chest x-ray. Cessation of paroxetine failed to improve symptoms.

Neurology was consulted for possible seizure activity. Continuous EEG was remarkable for moderate diffuse slowing and copious triphasic waves. MRI of the brain showed scattered white matter demyelination likely due to microvascular change, although a primary demyelinating process could not be excluded. Lumbar puncture was negative for fungal, bacterial, and viral meningitis/encephalitis etiology. While CSF markers for CJD were pending, psychiatry was consulted with subsequent lorazepam challenge negative for catatonia.

On hospital day 7, the patient became agitated, non-verbal, and disoriented to self, location, and time. In coordination with palliative care, the family elected to begin comfort care. The patient was ultimately discharged to an outpatient hospice facility. Five days after discharge, the final CSF results revealed elevated protein 14-3-3, elevated total tau protein, and positive Real-Time Quaking-Induced Conversion (RT-QuIC). Correlation of clinical symptoms, EEG findings, and CSF markers strongly supported a diagnosis of HV-CJD.

**Discussion:** CJD is a rare neurodegenerative disease caused by pathologic prions. Most cases present with neuropsychiatric decline, startle myoclonus, ataxia, and aphasia. Diagnostic workup for CJD includes brain MRI, EEG, and lumbar puncture with CSF evaluation of protein 14-3-3, total tau protein, and RT-QuIC. These diagnostic modalities are 97.8% sensitive when all are performed. In our described case, the involvement of antecedent visual hallucinations in the absence of ocular disease suggested the presence of HV-CJD, in which prions display neurotropism for the occipital lobe. HV-CJD accounts for approximately 3.7-4.9% of all CJD cases. Death typically occurs within one year of symptom onset.

This case highlights several considerations for clinicians. First, the importance of utilizing clinical suspicion to expedite patient management while awaiting confirmatory testing. In this case, the patient's transition to palliative care was expedited due to high clinical suspicion for CJD in the absence of alternative diagnosis. Further, multidisciplinary management was imperative for ruling out alternative diagnoses, implementing appropriate diagnostic workup, and transitioning to hospice. Finally, despite the rarity of HV-CJD, it must be considered in patients with visual changes followed by rapidly declining neuropsychiatric status and startle myoclonus.

## 18) UNUSUAL PRESENTATION OF AMIODARONE-INDUCED THYROTOXICOSIS IN A HEART TRANSPLANT RECIPIENT

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**Introduction:** Thyrotoxicosis occurs in approximately 13 % of patients taking amiodarone, depending upon dietary iodine intake<sup>1</sup>. Thyrotoxicosis presents as multi system illness with clinical picture dominated by perturbation of the cardiovascular system that may manifest as tachycardia, increased cardiac output, heart failure, or atrial fibrillation. Herein, we report an unusual case of a patient who presented with an altered mental state after heart transplantation due to thyrotoxicosis from remote use of Amiodarone.

**Case Presentation:** A 60-year-old male with a history of diabetes, chronic kidney disease, and ventricular tachycardia treated with amiodarone for three total years prior to orthotopic heart transplant one year ago was admitted to a community hospital for abdominal pain. He was diagnosed with cholecystitis and underwent uncomplicated laparoscopic cholecystectomy. The postoperative hospital course was complicated by restlessness and hyperactive delirium. During admission, the patient exhibited disorientation, periodic hallucinations, restlessness, weakness, confusion, anxiety, difficulty sleeping, cold intolerance, and intermittent tremors. Patient remained hemodynamically stable with heart rate in low 60s. CT of the head revealed chronic ischemic microvascular changes. Neurology was consulted with workup pursued that was negative for prion disease, paraneoplastic encephalitis, and epilepsy. Psychiatry was also consulted for management of hyperactive delirium. Finally, thyroid workup revealed elevated free T4 and T3, reduced thyroid-stimulating hormone (TSH). Thyroid-stimulating immunoglobulins and thyroid receptor antibodies were negative. Despite methimazole, hydrocortisone, and propranolol, his free T4 levels remained persistently elevated prompting a total thyroidectomy. Histopathologic thyroid examination supported a diagnosis of type 1 amiodarone induced thyrotoxicosis, which was further supported by prior exposure to amiodarone for 3 years.

Following total thyroidectomy, the patient's altered mental status slowly improved with normalization of free T4 and improving TSH. Subsequently, he was started on levothyroxine replacement. Throughout the hospital stay, there were no documented episodes of tachycardia, arrhythmia, or hemodynamic instability. He was discharged fully alert and oriented to person, place, and time.

**Discussion:** Narrowing the differential diagnosis to persistent thyrotoxicosis was difficult given the predominant central nervous system involvement on initial presentation. The absence of cardiovascular symptoms was most likely due to denervation of the recently transplanted heart which yielded resistance to actions of thyroid hormones that are predominantly manifested through adrenergic receptors. In this case, thyrotoxicosis was the most likely diagnosis due to lack of an alternative medical explanation and improvement of neuropsychiatric status congruent with normalization of thyroid levels. To our knowledge, there have been very few reported cases of post-heart transplant thyrotoxicosis manifesting with isolated AMS.

This case highlights several important considerations for clinicians. First, the importance of clinical, pathologic, and laboratory correlation to secure the correct diagnosis. Further, the role of multidisciplinary management for symptomatic management, appropriate diagnostic workup, and generation of a broad differential diagnosis in patients with AMS. Lastly, thyrotoxicosis should remain on the differential diagnosis for isolated AMS in patients with history of recent heart transplant given that this setting may mask most of the usual presenting features of thyrotoxicosis.”



## 19) THE EFFECTS OF APOLIPOPROTEIN E (APOE) GENE LOSS AND DIET ON PENTRAXIN 3 LEVELS AND ATHEROSCLEROSIS

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**Background:** Stroke remains one of the leading causes of disability and death in the world. Genetic and environmental interactions modulate atherosclerotic plaque formation and cerebro-vascular diseases, such as stroke. Inflammation increases one's risk for plaque formation and stroke. In this project we focused on the effects of the ApoE gene. This gene maintains lipid homeostasis by regulating cholesterol, triglyceride and phospholipid metabolism in the blood and brain. Previous studies done in pre-clinical animal models by Dr. Wesley and Dr. Dempsey demonstrated that ApoE deficiency enhances atherosclerotic plaque formation. Furthermore, ApoE deficient mice given a high-fat diet (HFD) increases the serum levels of pro-inflammatory molecules, including pentraxin3 (PTX3). However, PTX3 expression in the brain and aorta have not yet been examined.

**Objectives:** The purpose of this study was to determine if the expression of PTX3 is upregulated in the brain and the aorta of ApoE deficient (ApoE  $-/-$ ) mice as compared to wild type (WT) (ApoE  $+/+$ ) animals models following normal (ND) and HFD consumption.

**Methods:** We carried out immunohistochemistry (IHC) using paraffin embedded sections of brains and aorta obtained from ND and HFD fed WT and ApoE deficient animals. IHC was performed as described by (Wesley et.al., 2022). The primary antibodies anti-PTX3 anti-NeuN, a marker of neurons, and CD-68, a marker of macrophages, were used. Images were acquired and analyzed using the Keyence BZ-9000 fluorescence microscope. Differential PTX3 expressions were compared between ND and HFD fed WT and ApoE deficient mice of younger and older age groups. Quantification of image intensities were carried out using NIH imageJ software.

**Results:** PTX3 was upregulated in the brains and aorta of the ApoE deficient mice compared to WT mice, particularly at older ages. Higher levels of PTX3 were observed in atherosclerotic plaques of the aortas.

**Conclusions:** ApoE deficiency, a high fat diet, and aging are associated with increased expression of PTX3 in the brain and aorta. Thus, PTX3 may contribute to initiation and development of atherosclerotic plaque formation and stroke.

## 20) INCREASING ACCESS TO DIABETES-RELATED RETINOPATHY SCREENING IN PRIMARY CARE: ASSESSING THE USABILITY OF A LOW-COST RETINAL CAMERA AND TRAINING MODULE IN A RESOURCE-CONSTRAINED OUTPATIENT CLINIC

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**Purpose:** About 95 million diabetics worldwide suffer from diabetic retinopathy (DR), of which about 40% reside in resource-constrained settings. As diabetes-related eye disease is the leading cause of blindness among working-age Americans, early screening of DR can reduce both ocular and long-term diabetic complications. In resource-constrained settings, however, many patients remain unscreened due to the high-cost and complexity of implementing traditional retinal cameras, and the inaccessibility to ophthalmologists or specialists beyond primary care professionals (PCPs). As such, studying the usability and training of PCPs incorporating low-cost retinal cameras in their workflow plays a critical role in increasing access to DR screening in resource-constrained settings.

**Methods:** A comparative usability study was performed between a custom-made, low-cost handheld retinal camera and a standard handheld camera currently used in an outpatient primary care clinic in Rio Grande Valley, TX. The usability of their respective training modules was also compared. The low-cost camera's training module was custom-created and consisted of a one-page training manual handout with an in-person educator. 8 eligible PCPs with no prior ophthalmology training were enrolled in the study and were asked to perform a series of usability tasks, such as reading the training module and replicating a sample image of a model eye. PCPs were then administered a usability survey detailing their attitudes on each camera and training module, respectively. The usability survey consisted of free-response questions and rated statements following a five-point Likert scale. Data was statistically analyzed using the Mann-Whitney test for paired samples.

**Results:** The custom-made, low-cost retinal camera was found to be significantly easier than the standard handheld camera in acquiring a sample retinal image (4.6 vs. 3.63 on a Likert scale,  $p=0.021$ ). There was no significant difference between the ease of understanding of the training module for the low-cost camera and the standard camera. However, PCPs found the training module of the low-cost camera to be significantly shorter and more instructive for imaging the model eye, compared to that of the standard camera, ( $p=0.044$  and  $p<0.01$ , respectively). The most common suggestions for improving the standard training module included reduction of jargon and reduction of length of training. The most common suggestions for improving the low-cost camera training module understandability was clearly labeled button diagrams, and more pictures demonstrating camera positioning on the model eye.

**Conclusions:** By introducing a custom-made, low-cost handheld retinal camera and its associated training module, this study showcased improved reception among PCPs in specific tasks, compared to the standard handheld retinal camera used in an outpatient primary care clinic. Further clinical validation is needed by comparing the imaging of patient retinas, in order to evaluate the longevity of education and impact of education on clinical workflow in resource-constrained clinics. By creating and investigating the usability of a low-cost retinal camera for PCPs, this study can ensure early DR intervention and inform future screening programs and education of PCPs.

## 21) NECROTIZING SOFT TISSUE INFECTIONS: A CAUTIONARY TALE OF SUBACUTE PRESENTATION

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**Case Presentation:** A 66 year old male with a history significant for alcohol use disorder, alcoholic liver disease, HTN, hypothyroidism, chronic BLE venous insufficiency, OSA, depression, Crohn's disease and gout presented with a ~5 cm laceration to the RLE due to fingernail scratch. In the ED, the patient's laceration was repaired with simple interrupted sutures and sterile dressing was applied with Neosporin. The patient was admitted to the medical floor with concern for domestic violence and alcohol use disorder. On hospital day two, the patient was febrile to 101.5F and was started on Keflex for suspected infection/cellulitis. On hospital day three, the patient complained of increased pain and discharge of the wound and trauma surgery was consulted. She remained hemodynamically stable with blood pressures ranging from 133-192 systolic/53-101 diastolic, and pulse 87-99 bpm. The clinical picture was concerning for necrotizing soft tissue infection and the patient was taken urgently to the OR for debridement upon which they discovered necrotic fascia beneath the suture line. The patient was started on empiric antibiotics as no cultures were obtained. He returned to the OR for further debridement on hospital days five and 11. Antibiotics were discontinued on hospital day 19 and patient was discharged on hospital day 22 with plans for close follow up with general surgery as an outpatient and eventual elective skin grafting.

**Discussion:** While necrotizing soft tissue infections (NSTI) are known to have a variable presentation, they commonly present with symptoms such as fever, erythema, edema, pain, crepitus, bullae, necrosis, and ecchymosis with acute presentation over a time course of hours. Additionally, certain nonspecific findings such as loss of appetite, diarrhea, malaise and fatigue can present prior to skin findings of NSTI. Unlike this typical presentation of NSTI, our case involved a subacute presentation over the course of days, with a lack of acute fever on presentation. While the patient was experiencing loose stools typical of a potential early gastroenteritis manifestation of NSTI, this was complicated by the fact that the patient had a history of Crohn's Disease. Further complicating diagnosis, there was a fever spike on HD2, which was quickly relieved by Cephalexin and remained afebrile after this episode, resulting in the initial misdiagnosis of cellulitis. Furthermore, typical markers of hemodynamic instability, decompensation, or septic shock were absent at presentation and throughout hospitalization for our patient lowering early suspicion for NSTI. Markers of hemodynamic instability are a significant contributor to the LRINEC score for predicting NSTI risk, which assigns points to markers such as WBC, HGB, sodium, creatinine, and glucose. Despite the discovery of necrotic fascia beneath the suture line during surgical debridement, the lack of cultures obtained during debridement leaves the causative organism(s) of this NSTI unknown. While the patient was treated successfully with empiric antibiotics, wound care with close monitoring/woundvac, and further debridements, culture of the causative organism could have allowed for a more targeted therapy and potential explanation and characterization of this unusual presentation of NSTI for similar future cases.

## 22) ROLE OF THE IL-27 SIGNALING PATHWAY IN THE REGULATION OF REGULATORY T CELL SURVIVAL AND METABOLISM

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**Introduction:** Graft versus host disease (GVHD) is a complex, multi-systemic disease which arises after allogeneic hematopoietic stem cell transplantation, [1]. GVHD results from the donor T-cell recognition of recipient tissue as foreign leading to systemic inflammation. GVHD is characterized by the increased production of inflammatory cytokines and activated alloreactive donor T-cells, and the failure of existing regulatory mechanisms to modulate this inflammatory process [1, 2]. It has been shown that regulatory T (Treg) cells can suppress the severity of GVHD [3, 4]. This finding has been the impetus for pre-clinical and clinical efforts designed to re-establish a more effective Treg network as a potential treatment for acute and chronic GVHD. We previously demonstrated that blockade of IL-27 signaling, a member of the IL-6 cytokine family, was an effective strategy to reduce GVHD severity and increase the reconstitution of CD4+ and CD8+ regulatory T cells [5]. However, while the mechanism by which this occurred was not clearly defined, the data suggested that inhibition of IL-27 signaling prolonged the survival of regulatory T cells.

**Hypothesis & Specific Aims:** We therefore hypothesized that IL-27 plays an important role in regulating the metabolic and anti-apoptotic pathways that prolong the survival of CD4+ regulatory T cells.

**Study Methods:** Regulatory T cells from wild-type and IL27R-/- mice spleens were isolated and sorted by flow cytometry. To investigate if lack of the IL27R affects the apoptosis of regulatory T cells, lysates were analyzed by Western Blots to determine the expression levels of pro-apoptotic and anti-apoptotic proteins. The remaining sorted Treg cells were cultured for additional 36 hours in medium containing anti-CD3 antibody, anti-CD28 antibody and IL2, and were analyzed to examine the impact of IL27 on cell metabolism. Glycolysis and mitochondrial respiration rate were measured by extracellular acidification rate (ECAR) and oxygen consumption rate (OCR) using Agilent Seahorse XF Technology.

**Results & Conclusion:** Our results did not show any statistical difference in the absolute expression levels of pro-apoptotic (Bim, Bak, and Bax) and anti-apoptotic (Bcl-2 and MCL-1) proteins. However, there was a significant elevation in the Bcl-2/Bim expression ratio in regulatory T cells lacking expression of the IL27R. Since cell survival depends on the balance between pro- and anti-apoptotic molecules, these results might indicate that IL27R-deficient regulatory T cells are less sensitive to apoptosis. Additionally, the absence of IL27R appears to alter metabolic function of cells under stress with increased mitochondrial respiration and glycolytic rate to promote the survival state of the cells. Therefore, these findings suggest a critical role for the IL27 signaling pathway in maintaining the metabolic fitness of CD4+ regulatory T cells.

**Future Directions:** We will generate induced regulatory T cells in vitro with the addition of exogenous IL27 at different concentrations, to further confirm the role of IL27 in the regulation of Treg cells. Also, we will examine the AKT pathway, which plays an important role in the regulation of apoptosis and metabolism in IL27R-deficiency Treg cells, to investigate how IL27 regulates T reg cell function.

## 23) SEPTIC ARTHRITIS OF PUBIC SYMPHYSIS

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**INTRODUCTION:** Osteomyelitis of the pubic symphysis is a rare inflammatory infection that affects the pubic bone, often leading to joint involvement (septic arthritis). It represents 2% of cases of hematogenous osteomyelitis and is frequently overlooked due to its infrequent occurrence and non-specific symptoms of sudden pelvic/groin pain. Additional clinical features include pubic tenderness, fever, elevated white blood cell count, and possible bacteremia. Identifying relevant risk factors in the patient's medical history can narrow down potential diagnoses and formulate treatment plan.

**CASE:** A 76-year-old male with a medical history of metastatic prostate cancer, radiation cystitis, and recurrent UTIs presented with generalized weakness, lower abdominal pain, and unresolved symptoms with new fever and chills, despite recent discharge from another hospital on amoxicillin and Bactrim for UTI. The patient experienced increased nausea without vomiting for 2-3 days, and endorsed generalized weakness, occasional confusion, new onset of fever and chills, cold sweats, lower back pain, and recent 24 lbs weight loss over 6 weeks. Due to chronic urinary retention caused by radiation cystitis, the patient had an indwelling Foley catheter, and in 2022, a mechanical sphincter was removed with plans for future replacement by a urologist. On admission, patient was hemodynamically stable and afebrile. Physical exam found pain with deep palpation of the lower abdominal quadrants. Labs were notable for an elevated ESR and CRP with normal levels of WBC and hemoglobin. Blood cultures at this admission were negative. CT abdomen and pelvis revealed cystitis, septic arthritis of the symphysis pubis, and a fluid collection, confirmed by MRI showing osteomyelitis of the adjacent pubic rami. IV Cefepime, Metronidazole, and Vancomycin were initially administered based on blood culture sensitivity, with Metronidazole later discontinued upon infectious disease's instruction. Interventional radiology drained the fluid and performed a biopsy with a gram stain revealing very few polymorphonuclear leukocytes. The patient was discharged home with IV Zosyn administered through a PICC line for an additional 30 days, following 10-day course of Cefepime and Vancomycin in the hospital, per infectious disease recommendation.

**DISCUSSION:** A study of 100 patients with confirmed osteomyelitis pubis, a rare condition comprising less than 1% of all osteomyelitis cases, identified female incontinence surgery (24%), being an athlete (19%), previous pelvic malignancies (17%), and IV drug use (15%) as significant risk factors. Additional factors included vaginal delivery, male incontinence surgery, cardiac catheterization, and herniorrhaphy, while 10% of the patients showed no identifiable risk factors. Here we report a case of osteomyelitis of pubic symphysis in a patient with many risk factors including history of metastatic prostate cancer, mechanical sphincter placement, radiation cystitis, recurrent UTIs and chronic indwelling catheter. First-line treatment for most cases involves intravenous broad-spectrum antibiotics, reserving surgical debridement for non-responsive cases. As the patient's clinical symptoms improved with intravenous antibiotics, surgical intervention was postponed. The duration of antibiotic therapy varies based on disease severity. In conclusion, although pubis osteomyelitis is rare, it should be considered in cases presenting with pelvic pain, as early diagnosis and timely treatment can lead to a cure.

## 24) SEVERE PANCYTOPENIA SECONDARY TO EPSTEIN-BARR VIRUS

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**Introduction:** Epstein-Barr virus-associated infectious mononucleosis (EBV-IM) typically occurs in young adults and is characterized by fever, malaise, lymphadenopathy, and sore throat. EBV infection can cause pancytopenia through cytotoxic T-lymphocyte activation, disrupting bone marrow hematopoiesis. Here we present a case of severe pancytopenia secondary to EBV.

**Case Description:** An 18-year-old male with no significant medical history presented with four days of worsening fever, sore throat, nausea, vomiting, and difficulty swallowing. One month prior, he presented to urgent care with a tender lump below his chin and lymphadenopathy. He was diagnosed with IM and discharged with a one-week course of prednisone. The patient was evaluated at an ED two days prior to his current presentation and diagnosed with viral pharyngitis. He declined strep and monospot testing. On the day of admission, the patient presented to an ED with fever of 103 F, tachycardia of 135 bpm, and a positive monospot test. Work-up was notable for WBC count ( $500/\mu\text{L}$ ), hemoglobin (8.8 g/dL), ANC ( $10/\mu\text{L}$ ), and platelet count ( $6000/\mu\text{L}$ ), prompting transfer to our institution. The patient was hyponatremic (Na of 131 mmol/L) likely due to poor intake and had AKI (Cr of 1.4 mg/dL), but no transaminitis. He was positive for EBV IgM and IgG. Adenovirus, COVID, CMV, Hep B, Hep C, HIV, strep, direct antiglobulin test, paroxysmal nocturnal hemoglobinuria, histoplasma, and blastomyces testing were negative. Abdominal ultrasound showed no hepatosplenomegaly. Chest X-Ray was unremarkable. The patient was started on cefepime and switched to levofloxacin, fluconazole, and acyclovir for neutropenic fever prophylaxis. Immune thrombocytopenia was unlikely as platelet count was not affected by dexamethasone 40 mg daily for four days but did improve with two irradiated units of platelets. He received several days of Neupogen, a G-CSF agonist, and Promacta, an EPO agonist, to stimulate bone marrow recovery. Prolonged pancytopenia prompted bone marrow biopsy which revealed hypocellular marrow with trilineage hypoplasia, negative for a hematolymphoid neoplasm. These findings suggested marrow recovery following an EBV-associated aplastic anemia. CT head/neck was performed on day five to rule out neck abscess given dysphagia and leukopenia. Imaging revealed enlarged tonsils, likely secondary to IM, as well as possible bronchitis. This patient was diagnosed with EBV-IM resulting in a rare complication of severe pancytopenia and neutropenic fever. He was discharged after symptomatic improvement on both Cyclosporine 200mg BID and Promacta 150mg daily for 30 days for blood count recovery and continued infection prophylaxis. He responded favorably and avoided bone marrow transplant.

**Discussion:** Our findings demonstrate an unusual presentation of EBV-IM. Patients commonly have sore throat, fatigue, myalgias, and lymphadenopathy. Patients can experience splenomegaly, nausea, vomiting, palatal petechiae, and rash. While mild neutropenia has been associated with EBV, pancytopenia is a rare presentation in immunocompetent patients with potentially fatal consequences. Our patient presented with a severity of thrombocytopenia rarely seen with EBV bone marrow suppression. Diagnosing EBV-IM can be complicated by presentations of pancytopenia and neutropenic fever. A thorough workup, as well as early detection and treatment are crucial to prevent superinfections and ensure a prompt recovery.

## 25) CORONARY ARTERY SPASM IN A PATIENT PRESENTING WITH OUT OF HOSPITAL CARDIAC ARREST

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**Background:** Coronary artery spasm (CAS) is characterized by severe vasoconstriction of the coronary arteries and can result in myocardial injury, cardiac chest pain and cardiac arrest. We report a case of severe right coronary artery (RCA) spasm confirmed by coronary angiography in a patient admitted for out of hospital cardiac arrest.

**Case:** Mr. O is a 56-year-old male with a past medical history significant for paroxysmal atrial fibrillation not on anticoagulation and Hodgkin's lymphoma in remission, who called emergency services for new onset chest pain. On EMS arrival, the patient collapsed, became pulseless and rhythm evaluation demonstrated ventricular fibrillation. CPR was initiated and he was defibrillated once with return of spontaneous circulation. He was intubated in the field. Emergency department labs were notable for lactate elevated to 4, troponin elevated to .1, mild transaminitis and stage 1 AKI. An EKG demonstrated normal sinus rhythm without ST changes. A CT angiography of the chest was unremarkable. A urine drug screen was negative. Given concern for acute coronary syndrome leading to cardiac arrest, Mr. O was started on a heparin drip, an aspirin loading dose and was admitted to the cardiovascular intensive care unit for further evaluation. He underwent cardiac catheterization which was notable for severe vasospasm of the proximal and midportion of the RCA that resolved with nitroglycerin. There was residual 50-60% stenosis of the proximal RCA which was described as smooth, non-ulcerated and non-obstructed on ultrasound. The left main, left anterior descending and left circumflex arteries were free of angiographically significant disease. Mr. O was started on amlodipine, atorvastatin, and dual anti-platelet therapy for CAS in the setting of non-obstructive coronary artery disease. A TTE performed on day 3 of admission showed normal global left ventricular systolic function with multiple segmental abnormalities. The right ventricular systolic function was normal. Electrophysiology was consulted for potential implantable cardiac defibrillator placement which the patient declined. His clinical course improved significantly, and he was discharged home with an external defibrillator.

**Discussion:** CAS is the most common cause of ischemic heart disease in the setting of nonobstructive coronary lesions and has a wide variety of clinical presentations from cardiac chest pain to sudden cardiac death. CAS should be considered in cases of cardiac arrest of uncertain origin and can be diagnosed with provocative testing during coronary angiography. While classically associated with cocaine use and smoking, CAS can present in patients without significant risk factors. It is treated with long-acting calcium channel blockers and medical management of underlying coronary artery disease.

## 26) PROLONGED COVID-19 PNEUMONITIS AND SEVERE LUNG INJURY IN A DLBCL PATIENT AFTER CAR-T THERAPY: A CASE REPORT EMPHASIZING THE THERAPEUTIC ROLE OF CORTICOSTEROIDS

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**Introduction:** The impact of COVID-19 in the United States has been significant, with millions of cases and deaths reported. Immunocompromised individuals, especially those with hematological malignancies, face a higher risk of severe disease and mortality. This report presents a case of a patient who exhibited persistent COVID-19 positivity for 2.5 months, presenting as organizing pneumonia, despite being two years post-CAR-T treatment for diffuse large B-cell lymphoma (DLBCL). The patient showed clinical improvement only after the initiation of corticosteroids.

**Case Presentation:** A 43-year-old male, previously treated for DLBCL, presented with headaches and a mild cough on day 1. He tested positive for COVID-19 and showed cerebral edema on a head CT. An MRI revealed diffuse dural thickening without signs of cancer relapse. Lymphocyte levels were low, but other blood cell types were within the reference range. The patient was discharged on NSAIDs after his tension headache subsided, attributing the symptoms to mild COVID-19.

Three weeks later, day 21, he returned to the ED with worsening headaches, mild shortness of breath, and lymphocytopenia. Follow-up imaging ruled out lymphoma or infection. The patient was discharged with antibiotics for community-acquired pneumonia due to a residual dry cough.

A month later, day 51, he presented again with a productive cough and fever. Imaging revealed bilateral lung infiltrates consistent with pneumonia. Despite an extensive infection workup, no bacterial infection was identified. However, COVID-19 test was positive. Post-COVID organizing pneumonia was suspected and treated with corticosteroids, improving his condition.

Two weeks later, day 65, he returned with a fever, tachycardia, dyspnea, and hypoxia. Imaging showed recurring infiltrates with decreased lung volumes and increased opacity. Lymphocytopenia persisted, along with abnormal liver function tests. He tested positive for COVID-19. The patient received appropriate treatment for a positive aspergillus result and severe lung injury. With high-dose methylprednisolone, his condition improved, and he was gradually weaned off oxygen support.

**Discussion:** Patients with malignancies who contract COVID-19 often experience severe respiratory distress and higher mortality rates. Corticosteroid treatment has shown benefits in managing COVID-19-related complications, but a standardized protocol for managing prolonged COVID-19 pneumonitis and pulmonary manifestations is lacking. Similar cases highlight the potential benefits of corticosteroid intervention, but timing, dosage, and severity of COVID-19 are crucial considerations. Immunocompromised patients, even years post-CAR-T therapy, may still exhibit manifestations due to persistent lymphopenia and impaired viral clearance. Extended monitoring and vigilance are necessary.

**Conclusion:** This case highlights the challenges faced by immunocompromised individuals, especially those with hematological malignancies, in the context of COVID-19. The patient, two years post-CAR-T therapy for DLBCL, showed persistent COVID-19 positivity presenting as organizing pneumonia, with clinical improvement observed only after corticosteroid initiation. However, a standardized protocol for managing prolonged COVID-19 pneumonitis with pulmonary manifestations is lacking and requires further research. A comprehensive approach is necessary to effectively manage COVID-19 infections in this vulnerable population. Further research is needed to establish guidelines and protocols specific to immunocompromised patients to improve outcomes and reduce mortality rates.



## 27) SOCIOECONOMIC DISPARITIES IN TOTAL KNEE ARTHROPLASTY OUTCOMES: AN IN-DEPTH EVALUATION

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**Background:** Total knee arthroplasty (TKA) is a standard surgical procedure for end-stage knee osteoarthritis, but disparities in outcomes following TKA exist among different patient populations. Socioeconomic factors have been suggested as potential contributors to these disparities. This systematic review aims to evaluate the impact of socioeconomic factors on TKA outcomes by analyzing relevant studies and identifying the relationship between socioeconomic factors and specific TKA outcomes.

**Methods:** We conducted a comprehensive search on databases including MEDLINE, PubMed, Cochrane Library, and EMBASE using various combinations of keywords such as “disparities,” “arthroplasty,” “Knee,” “income,” “insurance type,” “outcomes,” “hospital volume,” and “socioeconomic status.” Only studies published in the United States between 1989 and 2022 and written in English were included. The inclusion criteria consisted of retrospective studies, prospective studies, and randomized controlled trials focusing on adult populations with osteoarthritis undergoing TKA. We employed both quantitative and qualitative analyses and adhered to the PRISMA criteria. Two independent investigators reviewed the abstracts of all articles in a blind manner. Articles were initially excluded based on titles and abstracts if they did not clearly pertain to TKA and socioeconomic factors, using an established tool for systematic review. Full-text articles were then reviewed to determine if they met the appropriate inclusion and exclusion criteria.

**Results:** The analysis included 25 studies examining the association between socioeconomic factors and TKA outcomes. It was consistently reported that African American patients had a longer length of stay (LOS) and worse patient reported outcome measures (PROM), compared to White patients undergoing TKA. White patients with private insurance, lower American Society of Anesthesiologists (ASA) score and lower Charlson Comorbidity Index (CCI), had a shorter LOS. Most studies found that African American patients were more likely to be discharged to inpatient rehabilitation facilities and to skilled nursing facilities. Readmission rates were generally increased among African American patients. However, some studies found higher correlation between at risk communities when compared to economically advantaged communities, demonstrating increased readmission rates in patients with Medicaid. One study reported both increased complications and readmissions of African American patients compared to White patients. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) two-year scores had a strong correlation with community poverty and patient education, with higher pain scores reported in communities with less education. As for revision TKA, some studies found that Asian and Hispanic-White patients were less likely to undergo revision TKA when compared to African Americans, with increased rates of both aseptic revision and ED visits for African Americans.

**Conclusion:** This systematic review provides evidence supporting the influence of socioeconomic factors on TKA outcomes. Insurance type, socioeconomic status, race, geographic location, and education were identified as essential factors affecting access to TKA and subsequent outcomes. Disparities were observed in TKA outcomes unfavorably for racial/ethnic minorities and individuals with lower socioeconomic status. The findings underscore the need for interventions to address each of these disparities in order to improve outcomes for all TKA patients, particularly targeting marginalized populations.

## 28) A LUNG CANCER MIMIC: SPONTANEOUS RESOLUTION OF PULMONARY MUCORMYCOSIS

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Mucormycosis is an infectious syndrome caused by multiple fungi including *Rhizopus*, *Mucor*, and *Rhizomucor* among others. These fungi are ubiquitous in nature and found in decaying vegetation/food and soil. Humans have ample exposure to these pathogens on a daily basis, but they typically do not cause infection unless there are underlying issues with the immune system. Mucormycosis most commonly affects the paranasal sinuses but can affect the lungs. Uncontrolled glucose levels seen in diabetes mellitus is the most significant risk factor for mucormycosis. Typical management depends on the severity of clinical presentation but often consists of antifungal medication and source control, typically, surgical debridement. We present a case of a spontaneous resolution of pulmonary mucormycosis in patient with type 2 diabetes that mimicked lung cancer.

A 46-year-old male was evaluated for a lung mass with a strong suspicion for lung cancer and a mild chronic cough. He has a past medical history significant for hypertension, obesity, and type 2 diabetes diagnosed 3 months prior to presentation with a hemoglobin A1C of 10.1 percent. Since, he has taken his diabetes medications intermittently. He smoked 2 packs of cigarettes per day for 20 years but quit 13 years prior. He had multiple pulmonary nodules incidentally noted during a Computed Tomography (CT) Cardiac Calcium Score testing 10 months prior to presentation. A follow up dedicated lung CT scan 3 weeks later demonstrated 5 nodules in the right and left lower lobes with the largest nodule measuring 7 mm. Ten months later, a follow-up CT scan was performed to track the pulmonary nodules. A new speculated 12 mm nodule in the left lower lobe was found. This led to a bronchoscopy and subsequent biopsy. This biopsy demonstrated non-necrotizing granuloma formation. Four weeks after the biopsy, a fungal culture was positive for *Rhizopus*. The patient was then seen by infectious disease and prescribed posaconazole. However, due to cost of the medication, the patient did not fill the prescription. Six weeks after the biopsy, a follow up CT scan demonstrated complete resolution of the lung nodule. After a review of the literature, there were two other cases of spontaneously resolving pulmonary mucormycosis. This appears to be the first case that initially presented as a nodule with a high suspicion of lung cancer.

## **29) TRIGEMINAL TROPHIC LIKE SYNDROME OF THE GREATER AURICULAR NERVE FOLLOWING PAROTIDECTOMY**

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Trigeminal trophic syndrome is a rare syndrome resulting from damage of the trigeminal nerve that causes cutaneous dysesthesia. This leads to subsequent self-inflicted damage and ulceration of innervated tissue. The nasal ala is typically affected in this syndrome. The greater auricular nerve is typically sacrificed during a parotidectomy due to the nature of the anatomy, and this leads to residual numbness of the de-innervated area. We report a case of a trigeminal trophic like syndrome affecting the cutaneous innervation of the greater auricular nerve.

A 59-year-old woman underwent a right-sided parotidectomy for a mass that ultimately was low-grade mucoepidermoid carcinoma with negative surgical margins and negative surrounding lymph nodes. Her initial post-operative recovery course was uneventful with mild incisional pain. At a 5-month follow up, she reported picking at her right ear for the past few weeks due to numbness. She noted sporadic bleeding and drainage from her ear. On exam there were erosions and erythema along with intermittent areas of crusting, bleeding, and serous fluid drainage in a geometric pattern affecting the middle and inferior helix of the right ear. Initially, this was thought to be a secondary infection due to excoriation of the ear. A 10-day course of oral clindamycin and topical mupirocin was given. Due to the lack of improvement and uncertain nature of the appearance of the lesion at a 10-day follow-up appointment, a punch biopsy of the inferior helix was performed. The results showed histologic changes consistent with prurigo nodularis secondary to chronic excoriation of the skin. Dermatology was consulted and they recommended using topical clobetasol for 10 days and occlusive dressing to aid with healing. Additionally, the patient was educated that avoidance of picking and itching the affected area is crucial to proper healing. Her ear was significantly improved after this course of treatment with residual erythema and hemorrhagic crusting affecting a much smaller area of the right helix.

To our knowledge, there are only six reports of a trigeminal trophic like syndrome affecting the skin in the distribution of the greater auricular nerve. This is the first known case with successful improvement following clobetasol and occlusive dressing use.

### 30) UNUSUAL PRESENTATION OF PILL-INDUCED ESOPHAGITIS

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**Introduction:** Pill-induced esophagitis is characterized by damage to the esophageal mucosa accompanied by sudden onset odynophagia, dysphagia, or retrosternal pain. Over 30 drugs can induce esophagitis, including Ibandronate, a bisphosphonate used to treat age-related osteoporosis. Here, we discuss an unusual presentation of bisphosphonate-induced esophagitis in a postmenopausal female with Barrett's esophagus.

**Case Description:** A 70-year-old female with a medical history of gastro-esophageal reflux disease and osteoporosis presented to the emergency department with severe odynophagia and chest pain. Patient had been taking an Ibandronate tablet, 150mg/mouth for 4 months for osteoporosis treatment. Patient reported feeling a painful gas bubble stuck in her chest and stomach. Pain worsened to a 9/10 pain level when eating and was alleviated when abstaining from eating food. She denies nausea and vomiting. Tums and Gas-X did not relieve symptoms. A CT scan revealed thickening of the distal esophagus consistent with severe esophagitis. Upon hospital admission, an Esophagogastroduodenoscopy (EGD) showed a very unusual presentation with evidence of sloughing of the underlying esophageal mucosa, as well as tongues of Barrett's to the distal esophagus and a 5cm hiatal hernia. The esophagus biopsy revealed granulation tissue and fibrinopurulent exudate only, consistent with an ulcer. The proximal esophagus biopsy findings were consistent for an ulcer with predominantly fibrinopurulent exudate, tiny fragments of necrotic squamous epithelium, and a minute fragment of viable squamous epithelium without diagnostic abnormality. Gastroenterologists informed her that the Ibandronate 150 mg tablet was strongly associated with pill-induced esophagitis. To improve her symptoms, she was prescribed oral Prilosec 20 mg BID and Sucralfate 1g BID and was advised to stop ibandronate administration until her esophageal condition improved. Upon discharge, patient reported pain and swallowing improvement, but poor appetite. Assessment of esophagus healing process and alternative osteoporosis treatment options will be determined by follow up EGD.

**Discussion:** This case highlights the importance of proper oral bisphosphonate administration. Pill-induced esophagitis can be self-limiting esophagitis, but if persistent, it can lead to complications such as severe ulceration, strictures, and rarely even perforation. Additionally, this case demonstrates that Ibandronate should be avoided in patients with anatomical disorders such as Barrett's esophagitis, esophageal stricture, and hiatal hernia as these disorders may have increased the patient's risk of pill-induced esophagitis. To avoid such complications, patients should take bisphosphonate medications with 6-8oz of water in an upright position, and remain in an upright position for at least 30 min. Recognition of the potential development of severe pill-induced esophagitis in patients taking oral bisphosphonates, especially in high-risk patients, is critical when providing patient education and care as it may prevent life-altering complications.

## 31) DISSEMINATED HISTOPLASMOSIS MASQUERADING AS SARCOIDOSIS: A CASE REPORT

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**INTRODUCTION:** Histoplasmosis, a fungal infection caused by *Histoplasma capsulatum* is typically found within the Mississippi and Ohio River Valleys. It can often be misdiagnosed as sarcoidosis due to the similarities in their clinical presentations. Histoplasmosis primarily affects the lungs but can spread to other organs, mimicking the granulomatous inflammation seen in sarcoidosis. Both conditions share common symptoms like cough, fatigue, and chest pain, and radiographic findings may also be similar. Physicians must carefully consider patient history, regional exposure risks, and employ appropriate diagnostic tests such as fungal cultures and serological assays to differentiate between histoplasmosis and sarcoidosis and ensure accurate treatment and management strategies.

**CASE DESCRIPTION:** A 65-year-old man was diagnosed with sarcoidosis in 2018 following an abnormal CT coronary calcium screening which showed pulmonary nodules and mediastinal lymphadenopathy. Mediastinoscopy found noncaseating granulomas with negative infectious workup. He had a dry cough and mild fatigue but otherwise was asymptomatic and therefore received no corticosteroid treatment until winter 2022, when he began receiving steroid bursts for fevers, chills, and intractable headaches. He also received methotrexate and leflunomide. His symptoms progressively worsened and resulted in multiple hospitalizations for high fevers, chills, and nausea. After undergoing months of steroid treatment, he was found to have pancytopenia and CD4 of 38 with negative HIV testing. He underwent autoimmune and inflammatory evaluation in spring 2023 at an outside hospital including negative ANA, ANCA, leukemia/lymphoma, and SPEP as well as normal immunoglobulins, complement, and light chain ratio levels in search of other symptomatic etiologies. A repeat CT chest scan showed increased pulmonary nodules and hilar adenopathy. He then underwent bronchoscopy and EGD, with biopsies positive for disseminated histoplasmosis, for which he was transferred to our hospital. During history taking, it was found that the patient had visited a cave with bat guano in Arkansas in 2018, weeks prior to onset of symptoms. A bone marrow biopsy was notable for histoplasmosis and no B cells. He received intravenous amphotericin B as well as voriconazole and was discharged with itraconazole. His pancytopenia was attributed to bone marrow suppression secondary to medications.

**DISCUSSION:** Histoplasmosis is an infrequent yet classic fungal infection, with the CDC reporting 6.1 cases per 100,000 in the Midwest. This fungus lives in cave soil that is inhabited by birds and bats especially near the Ohio and Mississippi River Valleys. While impossible to determine if patient had true sarcoidosis onset in 2018, the history and symptoms with recent findings make it likely that histoplasmosis was the culprit from the beginning. Recent immunosuppressant therapy likely played a role in allowing the fungus to further disseminate which resulted in the new findings above, further impacting this individual's health course. This case highlights the importance of taking an accurate and full social history which may lead to early diagnosis and treatment of histoplasmosis before it causes exacerbated and potentially fatal symptoms to patients.

## 32) THE BORDER OF CAVERNOUS SINUS SYNDROME AND TOLOSA-HUNT SYNDROME

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**Case Presentation:** A 48-year-old female with past medical history including obesity, T2DM, and tobacco use presented with right eye swelling, pain, and vision loss. She began noticing a dark spot in her right eye about three months prior, which progressed to a pressure-like sensation. A CTA of head and neck showed cavernous sinus hyperdensity. MRI of the brain also showed abnormalities in the cavernous sinus, orbital fissures, and right orbit. Ophthalmology evaluation showed a right afferent pupillary defect, decreased light touch sensation in CN V, and many studies came back non-contributory, including ANA, ANCA, MPO, IgG, IgG4, RPR, treponemal antibodies, Quantiferon gold, ACE, and CSF analysis. HIV and HSV testing were also negative. She went to an ER, followed by unrevealing work-up, and was discharged on steroids that improved her symptoms.

She presented again after running out of steroids. While inpatient, rheumatology believed that Tolosa-Hunt syndrome was most likely given the dural-based inflammation with right orbital involvement, extension to tentorial leaflets, and thrombosis of cavernous sinuses from previous radiographic imaging. On PET and MRI, there was increased uptake in the lateral aspect of the right orbit and possible inflammatory orbital pseudotumor. The patient also had a right orbitotomy with biopsies showing inflammation, but no morphologic evidence for involvement by other common etiologies. The patient's vision improved with IV methylprednisone and IV rituximab therapy and started on another prednisone taper outpatient.

**Discussion:** Cavernous Sinus Syndrome (CSS) describes any pathology of the cavernous sinus with signs/symptoms of ophthalmoplegia, autonomic dysfunction, chemosis, proptosis, vision loss, and/or sensory CN VI- CN V2 palsy. The most common etiologies of CSS include tumor and trauma. Infection, inflammation, and vascular anomalies represent more uncommon etiologies. In cases of CSS, unilateral ophthalmoplegia is the predominant presenting finding while visual field defects are uncommon. Symptoms are typically accompanied by unilateral pain.

We report an unusual case of cavernous sinus pathology with suspected inflammatory etiology resulting in CN II deficit, CN V deficit, proptosis, and pain without the classical finding of ophthalmoplegia. Differentials included Tolosa-Hunt and orbital pseudotumor, two inflammatory etiologies that are diagnoses of exclusion. However, Tolosa-Hunt requires ophthalmoplegia as part of its diagnostic criteria. Therefore, the patient did not meet criteria despite having most other classic findings such as inflammation on biopsy, orbital pain, relief with corticosteroids, and MRI with dural enlargement. Of note, diagnostic criteria for Tolosa-Hunt was established prior to the common use of MRI and advances in neuroimaging. Similarly, the patient had many of the common orbital pseudotumor findings such as orbital pain, swelling, inflammation on biopsy, and MRI with soft tissue lesions that enhance with contrast, but no ophthalmoplegia.

**Conclusion:** We present a particularly unusual case of cavernous sinus pathology with other common signs of CSS, but without ophthalmoplegia. This case highlights the need for reevaluation of diagnostic criteria for CSS etiologies, and in the case of Tolosa-Hunt, the revision of criteria with advances in knowledge of the condition.

### 33) WARM AUTOIMMUNE HEMOLYTIC ANEMIA IN THE CONTEXT OF ADENOVIRUS

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**Case Presentation:** A 20-year-old female was admitted with a history of primary membranous nephropathy, hypertension, iron deficiency anemia, preeclampsia, and intrauterine fetal demise presented to hospital with weakness, 2-3 days of upper respiratory symptoms, dyspnea, nausea, vomiting, and diarrhea. Labs showed normocytic anemia with hemoglobin of 3.3 g/dL worsening to 1.9 g/dL pending blood transfusion and leukocytosis of  $27.9 \times 10^3/\mu\text{L}$ . She denied symptoms of bleeding and was only taking losartan. Workup revealed elevated reticulocyte count (12.4%), LDH of 835 U/L, haptoglobin  $<10 \text{ mg/dL}$ . Peripheral smear showed spherocytes with evidence of red cell regeneration. Direct antiglobulin test was positive for IgG. Further workup showed negative ANA, EBV, RPR, Hepatitis A/B/C, COVID, CMV, HIV, parvovirus B19, antiphospholipid antibodies. Flow cytometry showed 0.2% myeloid blasts, likely reactive. Respiratory panel returned with positive adenovirus, suspected to be inciting factor. She required multiple blood transfusions for severe anemia. She received IV methylprednisolone, later transitioned to oral prednisone under guidance of hematology oncology who are tentatively planning for outpatient rituximab. Upon discharge, hemoglobin greatly improved to 7.2 g/dL.

**Discussion:** Here we present a case of warm autoimmune hemolytic anemia (w-AIHA) due to viral infection. This is a rare disease with incidence of 1:100,000 occurring as result of increased RBC destruction from antibodies binding to red blood cell antigens. It is suspected molecular mimicry between pathogen and self-antigens is a possible mechanism of pathogenesis. w-AIHA can present without inciting factors (primary). On the other hand, w-AIHA can be associated with malignancy such as CLL, autoimmune conditions such as lupus, medications such as penicillin, and infections syndromes (secondary). Common viral infections associated with w-AIHA include HIV, EBV, hepatitis C, and CMV. Adenovirus associated w-AIHA is rare. In fact, one study from France found only one out of 219 pediatric cases of w-AIHA did the patient also have concomitant adenovirus. Glucocorticoids are the first line treatment for w-AIHA and are effective in 80-90% of cases. Sometimes rituximab may be added as part of first line treatment (see citation). Of note, the average hemoglobin seen in patients with w-AIHA is about 7 d/dL. Only a few cases exist with hemoglobin count between 1 and 2 g/dL, which may be worsened by concomitant iron deficiency anemia as seen in this patient.

**Conclusion:** Although rare, w-AIHA with concomitant adenovirus infection should be suspected in patients who have unexplained anemia in setting of recent adenovirus infection. Prompt recognition of w-AIHA can prevent morbidity and mortality given high likelihood of response with steroids and improvement of anemia as seen in this case.

### 34) CLIMATE CHANGE VULNERABILITY AND OPPORTUNITIES FOR ADAPTIVE CAPACITY IN PATIENTS WITH HEART FAILURE IN AN AMBULATORY SETTING

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**BACKGROUND:** Climate change, a global crisis, affects health through changes such as more intense and longer lasting heatwaves. Some populations are more vulnerable to such events, including those with certain medical conditions, like heart failure. This study aimed to improve understanding of heat-related vulnerabilities and opportunities to enhance adaptive capacity of patients within an ambulatory heart failure clinic.

**METHODS:** Zablocki VA Heart Failure Clinic patients voluntarily completed a 25-question multiple-choice survey. We present descriptive statistics of the survey responses with count and percentage for categorical responses.

**RESULTS:** We found 46.55% of survey respondents strongly agreed or agreed they would benefit from discussing heat-illness related risks with their physician (n=60). 31.58% were not aware their heat-illness risk is higher on days >90 degrees. Several vulnerability factors were common: 70.69% follow a prescribed fluid restriction, 33.33% live alone, 20.34% lack a car with air conditioning, and 20.00% worry about their ability to pay electric bills. Notable knowledge gaps included 65% do not check forecasted temperatures, 60% do not plan activities for the coolest times of day, 43.10% lacked awareness of cooling centers, 27.12% lacked awareness of Wisconsin's Focus on Energy program, and 33.33% were unsure of heat-illness symptoms.

**CONCLUSIONS:** A sizable portion of survey respondents felt they would benefit from discussing their heat-illness risk with their physicians, and many underestimated their personal risk of heat-illness. Additionally, multiple vulnerability factors were highly prevalent and knowledge gaps were demonstrated in this population. Our findings support adaptive capacity opportunities through heat-illness education, anticipatory guidance, and increased resource awareness for patients with heart failure in ambulatory settings.



## 35) WHEN TOO MANY SYMPTOMS WEIGH DOWN THE DIAGNOSIS - A CASE OF STREPTOCOCCUS ANGINOSUS ENDOCARDITIS INITIALLY PRESENTING AS LOW BACK PAIN AND DYSURIA

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**Introduction:** Streptococcus anginosus group bacteria are a subgroup of the Viridans group streptococci that frequently colonize the oropharyngeal and gastrointestinal tracts without harm to the host. Infections can involve a variety of sites including skin/soft tissue, oropharynx, abdomen, brain, and respiratory tract; however S. anginosus endocarditis is rare. Common manifestations of infective endocarditis include fever, chills, weight loss, and cardiac murmurs. Although uncommon, musculoskeletal symptoms can be associated with infective endocarditis.

**Case Presentation:** A 76-year-old male with a history of atrial fibrillation, bicuspid aortic valve, and prostatitis presented to urgent care with lower back pain. Physical exam was notable for lumbar pain without neurologic deficits. He was prescribed conservative management including cyclobenzaprine. Four days later, the patient was hospitalized for worsening low back pain and MRI confirmed spondylosis and moderate foraminal stenosis with no sign of cord compression or other pathology. Lab work including CBC was normal. He was discharged to follow up in with Physiatry and physical therapy. Despite initial improvement with physical therapy, lidocaine patches, tizanidine, and oral steroids, the pain did not resolve. About two weeks later, he returned with new symptoms including dysuria, urinary frequency, fever, chills, and mild confusion. Based on his prior history of prostatitis, empiric ciprofloxacin was ordered. Urinalysis was subsequently negative, but labs demonstrated WBC  $17 \times 10^3/\mu\text{L}$ . After 24 hours without improvement and worsening fever to 104 the patient was readmitted for inpatient management. Initial evaluation included positive COVID-19 testing. He continued ciprofloxacin; however persistent fever prompted additional work up including blood cultures and echocardiogram which revealed a large echogenic mass on the aortic valve (3.6 x 2.4 cm) with new severe aortic regurgitation and possible perforation of the noncoronary cusp. Blood cultures were positive for Streptococcus anginosus. Treatment for infective endocarditis was initiated with vancomycin and cefepime and CT surgery was consulted for aortic valve replacement and debridement of the aortic root abscess. After surgery it was discovered that the patient had seen a dentist two months prior for a minor procedure.

**Discussion:** This patient had an uncommon presentation of a rare form of S. anginosus infection. Viridans group streptococci collectively account for 17% of all cases of native valve infective endocarditis and are the second most common cause after Staph Aureus which accounts for 30%. Significantly, less than 10% of all Viridans group cases are caused by S. anginosus. Infective endocarditis affects 2-5% of individuals with bicuspid aortic valve, but isolated bicuspid aortic valve is not an absolute criterion for dental prophylaxis. Fever and chills are present in the vast majority (90%) of infective endocarditis cases, but it is less common for patients to present with musculoskeletal symptoms, and only about 11% of endocarditis cases involve low back pain. In complex cases it is easy to allow the first pieces of information to bias a diagnosis. Our patient demonstrates the importance of guarding against Anchoring Bias and the need to consider alternative diagnoses when the working diagnosis shows an atypical progression or later information does not fit the pattern.

## 36) UNDERREPRESENTED MINORITY SPATIAL TRENDS AMONG US MD MEDICAL SCHOOLS

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**Background:** Although recent data show how underrepresented minority (URM) medical school matriculation rates are lower compared to corresponding US demographic changes, it remains unclear whether spatial demographics affects institutional URM matriculation composition. Low URM composition increases the risk of tokenism, a practice that gives the appearance of diversifying an institution without implementing cultural and structural changes to shift long-term recruitment practices. This study aimed to evaluate URM proportions at MD medical schools compared to their respective state, region, and nation.

**Methods:** Each MD institutions URM proportion was calculated using self-reported race/ethnic groups from the Association of American Medical College 2019-2020 database. Population data was analyzed from the 2020 US Census bureau database. We compared each institution's URM proportion to its respective state's, region's, and nation's URM proportion. An additional analysis was done for pooled private vs public institutions. We used a p-value cutoff of  $<0.05$ .

**Results:** Trends in the central region were analyzed for the 2019-2020 population. The central region comprises 12 states (IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, and WI) and a total of 24,092 medical student matriculants across 35 medical schools. When compared to the nation's URM proportion (0.293), 34 MD institutions' URM proportion was lower (all except Chicago-Pritzker;  $p < 0.001$ ). When compared to the central region's URM proportion (0.265), 14 MD institutions' URM proportion was lower (Iowa-Carver, Chicago Med Franklin, Kansas, Central Michigan, Oakland Beaumont, Missouri Kansas City, Saint Louis, North Dakota, Creighton, Nebraska, Northeast Ohio, Toledo, South Dakota-Sanford, MC Wisconsin;  $p < 0.001$ ) and six MD institutions' URM proportion was higher (Chicago-Pritzker, Illinois, Michigan State, Mayo, Ohio State, and Wright State-Boonshoft;  $p < 0.01$ ). When compared to their respective state's URM proportion, 16 MD institutions' URM proportion was lower (Carle Illinois, Chicago Med Franklin, Loyola-Stritch, Northwestern-Feinberg, Rush, Southern Illinois, Kansas, Central Michigan, Oakland Beaumont, Missouri Kansas City, Saint Louis, Creighton, Nebraska, Northeast Ohio, Toledo, South Dakota-Sanford;  $p < 0.02$ ). Eight MD institutions' URM proportion was above their respective state's URM proportion (Indiana, Michigan State, Mayo, Minnesota, Cincinnati, Ohio State, Wright State-Boonshoft, Wisconsin;  $p < 0.002$ ). Six states' URM proportion of pooled medical institutions fell under their respective state's URM proportion (IL, KS, MI, MO, NE, SD;  $p < 0.02$ ). Both pooled private and public MD institutions fell under the central region's and nation's URM proportion ( $p < 0.001$ ).

**Conclusion:** URM proportions among central MD institutions fall short on a state, regional, and national level, irrespective of private or public status. This study suggests the need for regional assessments that may help direct program-specific gaps and better address sub-population needs. Additional analyses are necessary to identify factors among MD medical institutions that led to comparatively higher URM proportions.

## 37) A QUALITATIVE STUDY OF CHICAGO GAY MEN AND THE MPOX OUTBREAK OF 2022 IN THE CONTEXT OF HIV/AIDS, PREP, AND COVID-19

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**Introduction:** The mpox outbreak of 2022 resulted in over one thousand cases of mpox among mostly MSM in Chicago. Our study conducted 47 interviews with a recruited cohort of Chicago gay men (age 18+) during June-September 2022 to investigate their experiences of mpox, HIV/AIDS, and COVID-19. During the mpox outbreak in Chicago, many gay men were vaccinated in gay social spaces, including a popular bathhouse as the most common participant mpox vaccination site. The ongoing health crises of HIV/AIDS and COVID-19 shaped gay men's encounters with mpox and vaccination. Specifically, higher levels of trust in medicine broadly and vaccination specifically have emerged among Chicago gay men due to specific social, sexual, and historical factors.

**Methods:** Semi-structured, in-depth interviews were conducted via Zoom with self-identified gay men living in Chicago. Recruitment occurred via flyers, direct recruiting, and snowball referrals. Most direct recruiting occurred on North Halsted Street in Chicago in the heart of the Boystown neighborhood and primarily during popular street events for Gay Pride (June 2022) and Market Days (August 2022). Interested participants were screened for eligibility and scheduled a time for a one-hour interview. Participants were asked detailed questions about their beliefs and behaviors in the context of overlapping mpox, COVID-19, and HIV/AIDS health crises, and about related social and sexual dynamics and experiences of clinical medicine more broadly.

**Results:** All forty-seven interview respondents had been fully vaccinated for COVID-19 and expressed very little vaccine hesitancy. Twenty-eight out of thirty interviewees who discussed mpox had already received at least one shot of the Jynneos vaccine, with many interviewees enduring long lines, sometimes at multiple locations, before vaccination in primarily gay social spaces. Four of the interview participants were living with HIV and all these men were on antiretroviral (ART) therapy with HIV well controlled. Of the forty-three interviewees who were HIV negative, 70% were on PrEP and all participants were aware of the health benefits of PrEP. Interview participants expressed very little to no vaccine hesitancy in the context of mpox or COVID-19.

**Conclusion:** These Chicago gay men demonstrated widespread enthusiasm for mpox vaccination as a disease prevention strategy and most had already been vaccinated themselves despite significant barriers. The enthusiasm of the participants in our study emerged within a medical landscape shaped by both COVID-19 vaccination and HIV/AIDS-related health interventions including ART and PrEP, which may have helped instill increased medical trust among this population. Our study suggests that urban gay men may comprise an unusual minority population with increased medical trust due to specific social, sexual, and historical experiences. A resurgence of Chicago mpox cases among MSM beginning in April-May 2023 gives our research increased urgency.

### 38) BILATERAL ADRENAL MYELOLIPOMAS AND TESTICULAR ADRENAL REST TUMORS IN CLASSIC CONGENITAL ADRENAL HYPERPLASIA

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**Introduction:** Congenital adrenal hyperplasia (CAH) is an autosomal recessive disease that disrupts cholesterol-derived hormone synthesis in the adrenal cortex. Classic CAH is the 21-hydroxylase deficiency subtype, which results in decreased synthesis of cortisol, and aldosterone, with overproduction of androgens. Overstimulation from adrenocorticotropic hormone (ACTH) overtime can lead to adrenal hyperplasia and tumors. Evaluation of adrenal nodules is determined by excess hormone production and evidence of malignancy. Adrenal myelolipoma is a nonfunctional benign neoplasm consisting of adipose and myeloid tissue that has been reported with CAH.

**Case Report:** Our patient is a 34-year-old male with classic CAH presenting to the ED with intermittent episodes of sharp upper abdominal pain. Patient was diagnosed with CAH at birth and stopped taking dexamethasone and fludrocortisone in 2015. He reports a several year history of abdominal discomfort and intermittent nausea. CT showed bilateral adrenal masses. Multiple right adrenal nodules were found, with the largest measuring 2.9cm. The large left adrenal mass with internal fatty elements measured 9.7cm. Elevated ACTH and 17-hydroxyprogesterone levels were consistent with classic CAH phenotype. Adrenal functional testing was negative consistent with myelolipoma. Patient was discharged on dexamethasone. Tumor was closely monitored for three months on medical management with no improvement in abdominal pain, prompting left adrenalectomy.

Most recent evaluation showed a two-fold increase the right adrenal mass. Testicular ultrasound also noted bilateral testicular adrenal rest tumors.

**Conclusion:** Poorly controlled CAH has a high prevalence of adrenal tumors due to unsuppressed ACTH stimulation, particularly myelolipomas. Therefore, imaging should be considered for patients presenting with localized pain. Management of CAH should also include monitoring for adrenal rest tumors and signs of infertility. Counseling patients regarding the importance of medication compliance and routine lab monitoring is essential to avoid these complications.

### 39) IMPORTANCE OF APPROPRIATE IMAGING: A SEROMA CASE STUDY

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**Introduction:** A seroma is a post-surgical complication of abnormal accumulation of serous fluid, including plasma and lymphatic fluid, in the surgical dead space. Seromas are hypothesized to occur in response to impaired lymphatic and vascular drainage in a surgical area. Often, seromas are reabsorbed by the body without intervention. Severe cases require surgical intervention.

**Case Study:** A 50 year-old male GSW survivor presented to the ER from prison eight days after having ORIF of left intraarticular distal humerus fracture due sloughing of skin at incision site. ER noted normal wound healing process. Ortho saw patient four days later revealing a post-op seroma of left elbow. He was given a compression wrap and weight bearing restrictions. He returned to the ER two days later complaining of left arm pain with extension and flexion at the elbow. An X-ray revealed extensive soft tissue edema. He was discharged with compression and weight bearing restrictions. Twelve days later, he returned with altered mental status requiring restraints and warmth along the seroma. Labs demonstrated leukocytosis, hypernatremia and elevated CRP and ESR. An elbow ultrasound found 20x3 cm fluid collection along the elbow, whereas x-ray demonstrated soft tissue swelling. Orthopedic surgery drained the seroma and sent fluid for culture. Antibiotics were started for septic arthritis. The culture grew MRSA so IV vancomycin and PO rifampin for six weeks followed by six months of suppressive oral antibiotics was recommended. The encephalopathy resolved with treatment of infection.

**Discussion:** Here we present a post-operative seroma complicated by infection. Given the common complication of seroma after surgical procedures, we highlight the importance of utilizing the appropriate clinical tools for diagnosis and adjustment of the treatment plan to fit patient circumstances. Also, the care of a patient should not be impacted by potential clinician bias towards the social circumstances of the patient.

## 40) ANALYSIS OF WISCONSIN ADRC FALLS PREVENTION PROGRAMS

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Falls are a common occurrence in the aging population, often resulting in devastating consequences. Interventions including home assessment and exercises have been proven to prevent falls. Despite EMS services receiving calls for thousands of falls yearly, many ADRCs within Wisconsin are unable to successfully connect with individuals who have fallen. This study aims to evaluate five Wisconsin ADRC organizations referrals and methodologies in place to contact a customer after a fall.

Contact was initiated with program coordinators at ADRC of Brown County, Winnebago County, Kenosha County, Door County and La Crosse County. Willing participants with an established falls prevention program participated in an interview via zoom to obtain 1.) the number of referrals and acceptances in each county and 2.) information regarding current practices and perceived barriers to obtaining referrals/acceptances. Data results were analyzed by comparing the ratio of referrals to client acceptances between different ADRC organizations as well as discussing perceived barriers in each county to ascertain why these differences may exist. Data results were analyzed by comparing the ratio of referrals to acceptances between ADRC organizations as well as discussing perceived barriers in each county to ascertain why these differences may exist.

The results showed Brown County (BC) has significantly higher acceptance rates for ADRC assistance ( $p < .05$ ) in 2022 and an improvement in number of referrals and referral acceptance since 2020. When considering referral rate after a fall, Door County's rate is significantly higher ( $p < .05$ ) than other counties. BC's higher acceptance rates may be due to new practices implemented over the last year that are unique to BC. This, along with the development of an EMS user friendly online referral form, may explain longitudinal trends in BC. Regarding Door County's high referral rate, researchers suspect this may be due to better community understanding of the ADRC and its' mission.

## 41) EFFECTIVENESS OF THE URM MENTORSHIP PLATFORM IN PROMOTING SCHOLARLY PRODUCTIVITY

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**Introduction:** Scholarship and mentorship play a vital role in academic medicine. However, many underrepresented in medicine (URiM) medical students often feel unprepared to engage in scholarly activities due to a lack of mentorship. The URM Mentorship Platform at the Medical College of Wisconsin (MCW) is a peer mentoring program designed to foster collaborative networks, promote mentorship, and facilitate interactions between students and faculty. This study aims to evaluate participant perceptions regarding the effectiveness of this peer mentoring platform in increasing scholarly productivity. A survey was distributed to URM medical students who had participated in the mentorship program at MCW (n = 22), and responses were analyzed using descriptive statistics.

**Methods:** A survey was emailed to URM medical students who had participated in the URM Mentorship Platform at MCW for its third year in session. The survey contained questions related to participants' perspectives on the effectiveness of the platform in promoting scholarship. The responses were collected anonymously and analyzed using descriptive statistics.

**Results:** The cohort consisted of 29 total participants with 20 mentees and 9 mentors and a total of 21 research teams, consisting of a pairing of a mentee, peer mentor and faculty mentor. All teams had their projects accepted at a regional meeting and 57% (12) had their projects accepted at a national meeting. Out of 29 participants, 16 individuals responded to the survey. Among the respondents, 81% (13) reported feeling supported by their peer mentors. 88% (14) reported feeling somewhat or extremely satisfied participating in the cohort. 94% (15) reported willingness to participate in the cohort again as a mentee or a mentor, out of which 3 applied and were accepted to help lead the platform for 23-24 academic year. Respondents identified scholarly productivity, networking opportunities, and mentorship as the key benefits of the program. Feedback for improvement included accommodating more students, structuring additional interactions between students and faculty, and diversifying mentee-mentor pairings across different classes.

**Conclusion:** The findings of this study indicate that URM students at MCW perceive several benefits from participating in the URM Mentorship Platform, including increased scholarly productivity. The results suggest that establishing similar peer mentoring groups at other institutions could be advantageous. The future direction for this project is to expand this during 2023-2024 and involve some specialties to gear to URM students interested in those highly competitive specialties.

## 42) OPHTHALMIC IMMUNE-RELATED ADVERSE EVENT: A RARE CASE ASSOCIATED WITH PEMBROLIZUMAB AND ZOLEDRONIC ACID

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**Case Presentation:** A 78-year-old female with a history of uterine carcinosarcoma presented a left orbital swelling, blurry vision, and diplopia. One week prior, she received pembrolizumab and zoledronic acid infusions for her carcinosarcoma. Three days post-infusion, an optometrist noted chemosis, restricted extraocular movements, and decreased visual acuity in the left eye. The patient was admitted to a tertiary hospital for further evaluation.

Vital signs were within normal limits with T 98.4, HR 68, RR 20, BP 148/81, and SpO2 97%. Labs showed hyponatremia (132 mEq/L) and elevated CRP (1.56 mg/dL) and ESR (41 mm/hr). MRI demonstrated left orbital inflammation with proptosis, equivocal optic nerve edema, and suspected disorganized phlegmon with no organized abscess.

Ophthalmological evaluation confirmed chemosis, proptosis and decreased visual acuity in the left eye. Intraocular pressure was within normal limits and extraocular movement were limited on the left eye. Given the recent infusions, the likely etiology was deemed to be a myositis or an inflammatory reaction secondary to the infusions. Based on patient's symptoms of chemosis, restricted and painful EOMs, and eyelid edema, the rule out diagnosis was orbital cellulitis, which can have devastating outcomes if left untreated.

Patient was empirically started on IV Rocephin, Flagyl, and vancomycin. After 72 hours of no response, the patient was initiated on IV Solu-Medrol 125mg q12h, which resulted in rapid improvement in the patient's symptoms with an improvement in her visual acuity and EOM deficit, resolution of diplopia, and improvement in chemosis. Labs also showed a reduction in CRP (0.52 mg/dL) and ESR (25 mm/hr). In order to rule out other causes, additional labs were negative for RF, ANA, and RPR. P-ANCA titer was at 1:80. The patient was discharged on an oral steroid taper and will continue to be followed by Ophthalmology.

**Discussion:** Uncertain ocular manifestations require a thorough differential diagnosis, considering infectious and autoimmune causes. Given the symptom profile, possible causes include drug-induced inflammation or orbital cellulitis due to the recent checkpoint inhibitor and bisphosphonate use.

Ophthalmic side effects of immune checkpoint inhibitors and zoledronic acid are rare but documented. They are often associated with orbital inflammation, posterior scleritis, and anterior uveitis, with orbital inflammation likely underreported.

Understanding the terminology is important. Orbital cellulitis is a soft tissue infection around the eye socket, while orbital inflammation indicates non-infectious inflammation. Posterior scleritis involves inflammation of the back of the eye's sclera, which overlaps with orbital inflammation. Uveitis is inflammation of the iris, ciliary bodies, or choroid, often linked to autoimmune disorders.

In this case, orbital inflammation was the primary consideration, with cellulitis and uveitis less likely. Undetected orbital cellulitis can have complications, warranting empirical and aggressive antibiotic treatment.

This case emphasizes the importance of considering rare medication-induced ocular inflammation. Clinicians should be aware of ocular side effects associated with medications, particularly in patients with cancer history. Empiric treatment with antibiotics is justified to avoid a devastating outcome due to a missed orbital cellulitis. Collaboration with ophthalmology and a thorough workup are necessary to rule out high-risk underlying pathologies.



### 43) TINEA CAPITIS IN A 14-DAY OLD INFANT

Jenna Le; Jacqueline Tran; Bernard Cohen, MD

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Tinea capitis is an infection of the hair follicles and shaft of the scalp. Common pathogenic causes are dermatophyte fungal species including *Trichophyton* and *Microsporum*. Although tinea capitis affects predominantly African American children, infants and adults of all racial and ethnic backgrounds could be affected. Existing reports of tinea capitis in infants are rare, which may be attributable to the lack of reporting at this stage of life. In infancy, the presentation of alopecia, scaling, and flaking associated with tinea capitis are often misdiagnosed as eczema or seborrheic dermatitis.

We present a case of a 14-day-old Caucasian boy evaluated for an annular, scaly plaque on the scalp. Examination of the specimen obtained included KOH slide preparation and fungal cultures. KOH preparation indicated broken hairs, spores, and an endothrix infection on the residual hair. Fungal cultures were positive for *M. Canis*. The patient was prescribed 15mg/kg/day of griseofulvin ultra-micro size tablets which were crushed and mixed with water, taken orally for 10 weeks. No side effects were reported. The patient exhibited clearance with no recurrence at the time of 3 months follow-up.

There are limited treatment guidelines for children less than two years of age presenting with tinea capitis. The American Association of Pediatrics Red Book reports that griseofulvin is FDA approved for children two years and older and terbinafine is approved for use in those four years and older.<sup>3</sup> Currently, for children less than two years of age, terbinafine has been used off label for treatment of tinea capitis. However, there is no consensus for standard of care for treatment of tinea capitis in this patient population. Our case depicts successful use of griseofulvin in the treatment of tinea capitis in a 14-day-old infant. In support, a literature review on the treatment of tinea capitis in infants reported that children less than two years of age treated with oral antifungal agents had nearly 100% cure rates without recurrence at time of follow-up. It is essential to establish a consensus and best practice guidelines to offer the best care for this patient population. Further efforts are underway to survey pediatricians and pediatric dermatologists in the United States to obtain a more accurate representation of tinea capitis cases in young infants and determine a consensus when treating tinea capitis in this population.

## 44) EOSINOPHILIA: A RED HERRING IN THE DIAGNOSIS OF ANCA VASCULITIS

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**Background:** Granulomatosis with polyangiitis (GPA) and Eosinophilic granulomatosis with polyangiitis (EGPA) are multisystem diseases characterized by inflammation in small to medium sized arteries within the family of antineutrophil cytoplasm antibody associated (ANCA) vasculitis. GPA is most diagnosed during the sixth decade of life, while EGPA is seen at a slightly younger age. This case is a unique presentation of a young man with ANCA vasculitis and peripheral eosinophilia.

**Case:** A 20-year-old male presented to clinic with multiple non-painful, non-pruritic lesions on bilateral elbows and palms and one month of worsening migratory polyarthralgia. He was treated with naproxen, but clinically worsened, developing hemoptysis, epistaxis, fatigue, and dyspnea. In the hospital, serologic tests were positive for cANCA (1:320) and PR3. CBC demonstrated anemia (5.3 g/dl) and peripheral eosinophilia (16%, 1.42). A punch biopsy of his skin lesions demonstrated palisaded neutrophilic granulomatous dermatitis and bronchoalveolar lavage suggested diffuse alveolar hemorrhage (DAH). He was diagnosed presumptively with EGPA due to the peripheral eosinophilia and treated with pulse dose steroids. His course was complicated by acute kidney injury with proteinuria and pulmonary embolism, both of which are now improved.

Initially, his case suggested an ANCA vasculitis; however, there was debate between if EGPA or GPA was more likely. Renal involvement, +cANCA and PR3 are more commonly found in GPA than EGPA. Lack of eosinophils in his GI biopsy or skin lesions also supports GPA, but at the time of his initial diagnosis peripheral eosinophilia made EGPA a promising diagnosis, especially given his young age, despite having no history of asthma or nasal polyps. After initial treatment with steroids and Rituximab, his peripheral eosinophilia quickly resolved, making it a likely red herring in the diagnosis of his ANCA vasculitis.

## **45) QUALITATIVE INTERVIEWS WITH ADDICTION MEDICINE TRAINEES INFORMING A NEED TO REVIEW DIVERSITY, EQUITY, INCLUSION AND ACCESSIBILITY IN INTERNAL MEDICINE RESIDENCY**

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Developing a diverse addiction medicine workforce will improve medical and public health responses to the increasing health risks created by substance use disorders (SUD). Diverse groups are more productive and innovative, more likely to engage in higher levels of critical analysis, and more likely to develop new approaches to teaching, research and mentoring. A workforce that embraces diversity, equity, inclusion, and accessibility (DEIA) principles may foster novel responses to address the disparities in treatment and outcomes experienced by Black, Indigenous, and People of Color (BIPOC) who are impacted by SUDs. However, a lack of exposure to addiction-related content in educational settings and experiences of bias and discrimination in the workplace limit opportunities to develop and retain a diverse workforce. With the Inclusion, Diversity, and Equity in Addiction medicine, Addiction research, and Addiction health professions (IDEAAA) initiative through which we are evaluating a strategy to improve diversity in the field of addiction by working with learners at different stages of the biomedical education pipeline, we conducted a qualitative interview study of addiction medicine training programs to improve understanding of experiences of participants in these programs who are self-identified members of underrepresented groups (URGs). IDEAAA's design and methods can inform other programs who have the desire to improve DEIA through novel approaches and can signal the DEIA needs earlier along the physician training pipeline such as at the Internal Medicine (IM) residency level. The AM trainee responses can be used to identify barriers and burdens that are relevant and able to be addressed earlier along the pipeline during the IM residency years. Of note, AM trainees reported bias of recruitment to AM programs from IM. Therefore, further work on identifying needs and opportunities to address DEIA concerns for IM trainees can be worthwhile in recruitment, reduction of burnout, and improving work culture which will also benefit patients and the community.

## 46) THE STATE OF PATIENT REPORTED OUTCOME MEASURES IN RHEUMATOLOGY: A SYSTEMATIC REVIEW

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**Background:** No prior studies in rheumatology have evaluated the timeliness or quality of patient reported outcome (PRO) measure reporting.

**Methods:** Clinical trials that informed new Food and Drug Administration (FDA) approvals for the first rheumatological indication between 1995-2021 were identified. Whether collected PROs were published, met minimal clinically important (MCID) difference or statistical significance ( $p < 0.05$ ) thresholds, or complied with CONSORT-PRO reporting standards was recorded. Hazard ratios and the Kaplan-Meier estimate were used to assess the time to PRO publication.

**Results:** Sixty six out of 85 included trials (77.6%) collected 212 PROs that were included in the analysis. A third of PROs were not published upfront (70/212, 33.0%) and one out of nine (24/212, 11.3%) remained unpublished four or more years after initial trial reporting. Publication rates were highest for HAQ-DI (97.4%) and lowest for SF-36 (81.8%). Less than half of published PROs met MCID and statistical significance thresholds (93/212, 43.9%). None of the included studies that collected PROs met all five CONSORT-PRO recommended reporting items, 3/66 (4.5%) met 4 items, 8/66 (12.1%) met 3 items, 20/66 (30.3%) met 2 items, 21/66 (31.8%) met 1 item, and 14/66 (21.2%) met no items.

**Conclusion:** One in nine PROs remained unpublished for more than 4 years after initial trial reporting and compliance with CONSORT PRO reporting guideline was poor. Efforts should be made to ensure PROs are adequately reported and expeditiously published.

## 47) A CASE OF ECHOCARDIOGRAM NEGATIVE AORTIC VALVE ABSCESSES

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**Introduction:** Patients with implanted cardiac devices and valve defects are at increased risk for infective endocarditis(IE). Prosthetic valve endocarditis (PVE) accounts for 20% of endocarditis cases. Endocarditis should be considered in patients with fever, bacteremia, and new onset murmur. Staph aureus is the most common cause, accounting for 31% of endocarditis cases. Patients with prosthetic valves are similarly affected by staph aureus. Group A strep is typically only seen in the context of rheumatic heart disease. Modified Duke's Criteria remain the standard for diagnosis, however, PVE can be more difficult to identify. Echocardiograms have lower sensitivity and specificity in PVE and annular abscesses and paravalvular defects are more common than vegetations. Cardiac CT or 18F-fluorodeoxyglucose PET/CT have shown to increase diagnosis of PVE and are now recommended imaging modalities for those with suspected PVE.

**Case Description:** A 55 year old man with a history of a bicuspid aortic valve requiring bio-prosthetic replacement and mechanical valve replacement, a permanent pacemaker for heart block from complications related to his second valve replacement, and ascending aortic aneurysm graft repair presented from an outside hospital with resolved septic shock and Group A Strep (GAS) bacteremia of unclear etiology. IV Penicillin G was selected as an antimicrobial. He had no recent history of skin infections or dental procedures. An initial TEE noted small fibrinous stranding on the pacemaker leads, but there was no evidence of vegetations suggesting endocarditis. Other initial imaging studies also did not uncover an infectious source. The decision was made to treat for endocarditis given the high risk despite an inconclusive workup.

Despite adequate antibiotic coverage and negative blood cultures, the patient experienced several complications including bilateral spontaneous retroperitoneal hematomas and two cardiac arrests secondary to ventricular fibrillation. A second TEE was obtained after his second cardiac arrest, three weeks into his hospitalization. This demonstrated worsening aortic valve regurgitation without vegetations. At this point a PET scan was obtained which demonstrated thickening of the aortic valve. CT angiogram revealed a pseudoaneurysm at the previous graft repair with possible infection. The patient was transferred to our Cardiothoracic Surgery colleagues and underwent a significant, but successful operation to repair the pseudoaneurysm. Intra-operative findings revealed infective endocarditis with an aortic root abscess, an intracardiac fistula through the left atrium, and infection of the tube graft.

**Discussion:** Prosthetic valve endocarditis can be difficult to identify on standard imaging and may present with atypical imaging findings such like abscesses. Delayed diagnosis of endocarditis can have devastating consequences as evidenced by our patient. He continues to be affected by the mental toll of multiple cardiac arrests and a prolonged ICU stay. Utilization of cardiac CT or 18F-fluorodeoxyglucose PET/CT has proven to be effective in identifying PVE. These new imaging modalities should be considered in patients with high clinical suspicion for IE with negative echocardiogram findings.

## 48) ENDOGENOUS CUSHINGS SYNDROME IN WISCONSIN: A 5-YEAR SNAPSHOT OF PATIENT DATA FROM A SINGLE INSTITUTION

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**Introduction:** Endogenous Cushing's syndrome (CS) is an uncommon endocrinopathy characterized by elevated cortisol levels that manifests with multiple biochemical and clinical findings including central obesity, hypertension, mood disturbances, and hyperglycemia. Previous studies estimate an incidence for CS at 1.8-3.2 cases/million population/year for all ages. Multiple studies have also found Cushing's disease (CD) to be the most prevalent etiology of endogenous CS. We present a descriptive overview of demographical information from a large cohort of endogenous CS patients within Wisconsin treated at a single institution.

**Methods:** We retrospectively searched clinic records from the endocrinology, endocrine surgery, and neurosurgery clinics at the Medical College of Wisconsin (MCW) between May 1, 2017, and December 31, 2022, to identify all patients treated for endogenous CS. We included only patients with Wisconsin addresses who were diagnosed and treated at MCW during the study period. The diagnosis of CS was established using standard biochemical testing and all patients underwent therapy for clinically significant hypercortisolism. Patients diagnosed with exogenous CS and those who did not undergo therapy during the study period were excluded. Demographic, biochemical, and clinical data were collected for each patient. Incidence rates were calculated using the number of patients in this cohort divided by the time interval and sum of the county populations represented by patients' residential zip codes.

**Results:** During the study period, 185 patients met biochemical diagnostic criteria for endogenous CS and received therapy. Mean age at diagnosis was 52.4 years (SD 14.7). Of these patients, 135 (73.0%) were female. Of the total cohort, 111 patients (60.0%) had adrenal CS, 68 patients (36.8%) had CD, and 6 patients (3.2%) were diagnosed with ectopic CS. Mean age at diagnosis for each subtype was 56.0 years (SD 13.4), 45.7 years (SD 14.4), and 61.9 years (SD 13.2), respectively. The overall incidence for all etiologies of endogenous CS was 7.23 cases/million/year. At diagnosis, 117 patients (63.2%) had cushingoid features. Forty-nine patients with adrenal CS (44.1%), 62 CD patients (91.1%), and all 6 ectopic CS patients had cushingoid features. If only patients with cushingoid features were considered, the incidence for endogenous CS was 4.83 cases/million/year.

**Conclusions:** Within our endogenous CS cohort of patients residing in Wisconsin, adrenal CS was the most common etiology; however, when considering only patients with cushingoid features, CD was the most common etiology. Patients with CD had lower mean age at diagnosis compared to adrenal and ectopic CS. We recognize it is unlikely that our single institution diagnosed and treated all cases of endogenous CS in WI during this period. This results in an underestimate of the incidence of CS. Regardless, the incidence based on our total cohort (7.27 cases/million/year) or only patients with cushingoid features (4.83 case/million/year) are both higher than previously reported incidence rates. As these incidence rates are an underestimate, we suggest that endogenous CS is likely much more common in the Wisconsin population than in other studied populations.

## 49) MULTIPLE LYMPHOMATOUS POLYPOSIS ON SCREENING COLONOSCOPY IN AN ASYMPTOMATIC PATIENT WITH UNDIAGNOSED STAGE IV MANTLE CELL LYMPHOMA

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**Introduction:** Patients with mantle cell lymphoma (MCL) commonly present with late-stage disease involving the spleen, lymph nodes, blood, and bone marrow. A common extra nodal site of MCL is the gastrointestinal tract. Microscopic lower gastrointestinal involvement is common in patients diagnosed with MCL. Multiple lymphomatous polyposis (MLP) is a rare gastrointestinal presentation of MCL with diffuse colonic nodules or polyps. MLP can be accompanied by gastrointestinal symptoms and is often identified after MCL diagnosis. However, incidental diagnosis of MLP and asymptomatic stage IV MCL during routine screening colonoscopy is seldom reported in literature.

**Case presentation:** We present a 54-year-old male with a past medical history of gastroesophageal reflux disease, irritable bowel disease, and postural orthostatic tachycardia syndrome who was asymptomatic with a benign physical exam at presentation for screening colonoscopy. Colonoscopy showed a diffuse nodular colon consistent with MLP. Biopsies showed scattered, moderately enlarged lymphoid nodules within the mucosa and submucosa composed of small to medium-sized cells with slightly irregular nuclear contours and little cytoplasm. Lymphoma cells co-expressed CD5+ and CD20+ and were positive for BCL1/CyclinD and BCL2. Fluorescence in situ hybridization detected the t(11:14) IGH::CCD1 translocation characteristic for MCL. The patient was then referred to hematology, where he had a benign physical exam with no palpable lymphadenopathy or B symptoms and an unremarkable complete blood count and complete metabolic panel. Positron emission tomography (PET) scan revealed disease in the gastroesophageal junction, terminal ileum, rectum, extremity soft tissue, gluteal region soft tissue, paraspinal muscles, spleen, parotid glands, and focal lesions in the proximal left humerus and the right 11th rib consistent with stage IV disease. The patient was treated with three cycles of bendamustine, rituximab, and acalabrutinib followed by three cycles of cytarabine, rituximab, and acalabrutinib. After completion of treatment, there was no evidence of MCL on bone marrow biopsy or colonoscopy. Repeat PET scan was negative for suspicious hypermetabolic activity.

**Discussion:** This is a rare case where the diagnosis of stage IV MCL was initially made after finding MLP on routine colonoscopy. One similar case was found where less extensive stage IV MCL was diagnosed after finding MLP and an ileocecal mass on routine colonoscopy. More often, MLP is found in patients who have already been diagnosed with symptomatic MCL. Case reports describe patients with palpable lymphadenopathy or B symptoms leading to MCL diagnosis prior to the discovery of MLP. Other MCL and follicular lymphoma case reports describe patients who experienced GI symptoms such as hemochezia and abdominal pain caused by intussusception prompting colonoscopy and the discovery of MLP. MLP and MCL should always be the differential diagnosis when diffuse polyps are seen during routine colonoscopy. Gastrointestinal symptoms should be monitored for in patients with MLP, although these symptoms were absent in this patient case. This case shows that the clue to a stage IV mantle cell lymphoma diagnosis, in rare cases, is diffuse polyps inside the gastrointestinal tract waiting to be discovered incidentally by gastroenterologists.

## **50) THE USE OF A SINGLE SIDE BRANCH ENDOGRAFT TO SUCCESSFULLY MANAGE AORTIC ARCH ANEURYSM IN TWO PATIENTS**

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In this report, we present the relatively novel use of a single side branch endograft in landing zone 0 to manage aortic arch aneurysms in two patients. The first patient is a 64-year-old woman with a history of type B aortic dissection status post thoracic endovascular aortic repair. The second is a 74-year-old man with a history of coronary artery disease status post coronary artery bypass grafting and aortic pseudoaneurysm status post aneurysm coiling. To date, few studies exist outlining the use of a single side branch endograft in landing zone 0. We aim to add to the scant body of literature detailing this procedure and its outcomes. Furthermore, we discuss this procedure in the context of existing studies that report on the mortality and morbidity associated with open redo aortic arch reconstructions, the traditional approach to treating aortic arch aneurysms.



## **51) TRICEPS PERIOSTEAL SLEEVE AVULSION IN A 12-YEAR-OLD FEMALE**

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This report details a 12-year-old female who suffered from a triceps periosteal sleeve avulsion, olecranon fracture, and a nondisplaced radial head fracture in her right arm after falling on an outstretched hand while playing soccer. The triceps avulsion and associated olecranon fracture were successfully treated through open reduction and internal fixation. Within three months of the procedure, the patient regained strength and range of motion with minimal atrophy. Radiographs at this time demonstrated healing of the olecranon avulsion fracture and the nondisplaced radial head fracture. To the best of our knowledge, there are no documented cases of triceps periosteal sleeve avulsion reported in a female patient this young. This case study aims to support clinicians in the assessment and treatment of this rare condition in pediatric populations.

## 52) IMPACT OF BRIEF CULTURAL HUMILITY & IMPLICIT BIAS TRAININGS AT THE SATURDAY CLINIC FOR THE UNINSURED – RESEARCH POSTER

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**Introduction:** Patient-clinician racial discordance has proven to be a predictor of worse health outcomes for underrepresented groups. Demographic data from the Saturday Clinic for the Uninsured (SCU) showed racial discordance between patients and volunteers in those who identified as Black/African American (32% vs 13%) and those who identified as White (22% vs 53%). Studies have shown improving physician communication and providing bias training can help address these disparities.

**Problem Statement or Objective:** This project aimed to alleviate this discordance by developing a cultural humility and implicit bias training for student volunteers.

**Methods:** Student managers (n=14) were provided a 1.5-hour training which included time to reflect on personal experiences and how it informs the care they provide patients. Medical student volunteers (n=83) were provided with an abbreviated (30-min) version of this training. After the training, attendees filled out a reflection survey using a 5-point Likert scale, asking them to rate their understanding and confidence pre- and post-intervention. We received 12 pre- and 9 post-intervention surveys from student managers and 46 pre- and post-intervention surveys from medical student volunteers.

**Main Results:** Analysis showed average scores from pre-to post-intervention increased by 1.00 point for student managers and 0.24 points for medical student volunteers. Across all reflection questions, there was a statistically significant increase in confidence scores as a result of the training.

**Conclusions:** Our project indicates that engagement of student volunteers in cultural humility and implicit bias training led to higher confidence scores regarding these topics. Future directions include developing longitudinal educational programming that incorporates strategies for advancing health equity in our patient population.

## 53) SPONTANEOUS RENAL CYST RUPTURE WITH RETROPERITONEAL HEMATOMA

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**Introduction:** Renal cysts are commonly found in patients with chronic kidney disease. The spontaneous hemorrhagic rupture of these cysts without antecedent trauma is rare, with symptoms ranging from flank pain to hypovolemic shock. Here we present a case of spontaneous renal cyst rupture with retroperitoneal hematoma.

**Case Description:** A 60-year-old male with a past medical history significant for end-stage renal disease on dialysis three times a week, hypertension, coronary heart disease, peripheral artery disease, and hyperlipidemia presented with an acute onset of left-sided abdominal pain and left flank pain radiating to the chest and back. He reported shortness of breath and anuria but denied cough, hematochezia, melena, or any other symptoms. The patient had recently been diagnosed with acute deep vein thrombosis and was discharged on warfarin. On the day of admission, the patient presented to the ED with tachycardia of 110 bpm and hypertension of 250/110. Work-up was notable for hemoglobin of 8.8 g/dL, hematocrit of 28%, and excessive anticoagulation with a supratherapeutic INR of 4.3 indicative of acute blood loss and normocytic anemia. The patient was hyperkalemic (5.5mmol/L), with elevated creatinine (14.06 mg/dL), and blood urea nitrogen (67 mg/dL). Repeat hemoglobin and hematocrit six hours later showed a decrease to 6.0 g/dL and 19%, respectively. CT abdomen/pelvis revealed a moderate-to-large left-sided retroperitoneal hemorrhage secondary to hemorrhagic left kidney with multiple foci of active extravasation. There was no clear solid mass identified on prior imaging and the hemorrhage was presumed to result from spontaneous cyst rupture due to acquired polycystic renal disease consistent with end-stage renal disease. He was diagnosed with class II hemorrhagic shock with moderate thrombotic thrombocytopenic purpura and was admitted to the ICU. Warfarin was discontinued upon admission, and INR reversed with Vitamin K and PCC. Resuscitation was done with four units of FFP, two units of platelets, and one unit of packed RBCs. He was also started on IV nicardipine for hypertension treatment. Post-conservative management, the patient's hemoglobin stabilized. He safely started on apixaban without any issues. The patient was discharged to a nursing facility in stable condition on apixaban and sevelamer carbonate, with symptomatic improvement including resolution of hyperkalemia and thrombocytopenia.

**Discussion:** Our findings demonstrate an unusual complication of a spontaneous cyst rupture resulting in retroperitoneal hematoma. Clinical trends show that elderly patients on anticoagulation therapy, such as warfarin, and chronic kidney disease are at increased risk of developing a retroperitoneal hematoma. Symptoms are often vague but include Lenk's triad of acute flank pain, tenderness, and symptoms of internal bleeding, as seen in this patient. The mechanism of cyst rupture with hemorrhage is unclear, as it is not known whether expansion with increased intracystic pressure occurs with the subsequent tearing of blood vessels, or whether hemorrhage into the cyst is the initial event with rupture from cyst expansion. Diagnosis of retroperitoneal hematoma is complicated by the limited manifestation of clinical symptoms until the onset of hemorrhagic shock. A thorough workup, including imaging, and early diagnosis are crucial for the best prognosis.

## 54) DISSEMINATED CNS ASPERGILLOSIS PRESENTING AS SUBACUTE VISION LOSS

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**INTRODUCTION:** Light-chain Amyloidosis is a potential complication of any plasma cell dyscrasia that produces monoclonal immunoglobulin light chains. Staphylococcus lugdunensis infections in humans range from harmless skin colonization to invasion with the majority related to skin and soft tissue, the bloodstream, and prosthetic devices. The frequency of S. lugdunensis infection is probably underappreciated since many clinical laboratories do not routinely speciate coagulase-negative staphylococci. Moreover, the term “Aspergillosis” refers to illness due to allergy, airway or lung invasion, cutaneous infection, or extrapulmonary dissemination caused by Aspergillus. Underlying conditions that compromise the immune system serve as risk factors for invasive pulmonary Aspergillosis including: severe and prolonged neutropenia, receipt of high doses of glucocorticoids, and other drugs that lead to chronically impaired cellular responses. In the paranasal sinuses, Aspergillosis is usually seen in neutropenic patients with hematologic malignancy with nasal congestion, fever, and pain in the face and around the eye as common presenting features. If the orbit becomes involved, additional symptoms include blurred vision, proptosis, and chemosis. The infection can also extend locally into the vasculature leading to a variety of central nervous system (CNS) manifestations. In a study of imaging findings associated with CNS Aspergillosis, three patterns were observed: ring-enhancing lesions consistent with brain abscesses, cerebral cortical and subcortical infarction with or without superimposed hematomas, mucosal thickening of a paranasal sinus with secondary intracranial dural enhancement consistent with direct extension from the sinuses. Disseminated CNS infection is associated with a very poor prognosis.

**CASE:** A 83-year-old male with PMH of Lymphoma-associated Amyloidosis (status post-splenectomy, treated with Bortezomib in 2016, and Pomalidomide-Dexamethasone 4mg in 2018), type II DM and prior right eye blindness who was admitted to the wards with subacute to acute left eye vision loss. MRI showed right anterior temporal lobe abscesses with associated diffuse paranasal sinus thickening and right mastoid effusion. The patient was status post-right palate and right middle turbinate biopsy with culture of 1 colony of pan-sensitive Staphylococcus lugdenesis and post right pterional craniotomy for anterior temporal lobectomy and abscess evacuation 13 days later. Purulence was noted intra-operatively. Intra-operative cultures grew with 1 colony of Aspergillus species. Disseminated aspergillosis likely spread from the right sphenoid and cavernous sinuses due to immunocompromised state related to Amyloidosis. The patient recovered with broad antibiotics and antifungals then narrowed to Voriconazole alone 15 days later. However, patient’s vision loss was permanent at discharge.

**DISCUSSION:** Here we report a case of Disseminated CNS Aspergillosis in an immunocompromised patient with Lymphoma-associated Amyloidosis who presented with subacute vision loss. Aspergillosis is known to be associated with immunosuppression and Type II Diabetes Mellitus. Therefore, this diagnosis should be suspected in asplenic patients who present with orbital pain or vision complaints. Although Voriconazole treatment was effective in clearing the infection, the patient’s vision loss could have been prevented if detected earlier. This case highlights the importance of infectious disease monitoring in immunosuppressed patients and the need for a multidisciplinary approach involving Infectious Disease, ENT, Ophthalmology, and Neurology in a complex scenario to achieve the best outcomes.

## 55) A CASE OF CLINICALLY STAGED IVB SMALL CELL CARCINOMA OF THE OVARY - HYPERCALCEMIC TYPE

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**Introduction:** Small cell carcinoma of the ovary, hypercalcemic type (SCCOHT) is a very rare (< 0.01% of ovarian malignancies) and highly malignant ovarian cancer that commonly affects young women. The mean age of diagnosis is 23 years and long-term survival rate in early-stage cases is around 30%, with the majority of patients dying within 2 years of diagnosis.

**Case Presentation:** A 38-year-old nulliparous woman with severe obesity (BMI 66) and hypertension presented with constipation, fatigue, weakness, and poor appetite that had progressively worsened over the past 2-3 weeks. Upon admission, the patient was found to have significant hypercalcemia (17.1 mg/dL, normal 8.5-10.5), leukocytosis (29.4 x 10<sup>3</sup>/mm<sup>3</sup>, normal 4.5-11.0) and lactic acidosis (5.4 mmol/L, normal 0.5-2.2). Her initial workup for hypercalcemia showed low PTH (8.4 pg/mL, normal 10-60), 25-Hydroxycholecalciferol (12.7 ng/mL, normal 20-40) and 1,25-Dihydroxycholecalciferol (<5.0 pg/mL, normal 18-78), and elevated PTHrP (25 pmol/L, normal < 2.5). CT chest, abdomen, and pelvis revealed an adnexal mass with extensive lesions throughout her pelvis, abdomen, and chest. CA-125 (262 kU/L, normal 0-35) was also elevated. Of note, a CT scan from ten months prior did not demonstrate any signs of malignancy. An ultrasound guided omental core biopsy was performed which was confirmatory for metastatic ovarian small cell carcinoma (IMHC positive for PAX 8 and focally positive for CK, EMA, WT1, and calretinin, but negative for CK7, CK20, TTF-1, CDX2, CD10, synaptophysin, chromogranin, and inhibin). During the workup the patient 's hypercalcemia improved after being treated with IV fluids, calcitonin and zoledronic acid.

Given her poor prognosis and clinical status, chemotherapy was likely to provide minimal benefit and ultimately the patient decided to pursue a comfort-oriented plan of care and ultimately passed away.

**Discussion:** This is the first case to report clinically staged type IVB SCCOHT. Most cases in the literature have patients with earlier stages of the malignancy, and typically undergo a multimodal therapy approach involving cytoreductive surgery, radiotherapy and chemotherapy with a medication regimen largely determined from data related to the outcomes of patients with small cell lung carcinoma. Our patient 's unremarkable CT scan from ten months prior and rapid decline in respiratory status which ultimately caused her to pass away nine days after admission demonstrate the extremely aggressive nature of the disease. By reporting this case, we hope to increase awareness of this rare malignancy and highlight the aggressive nature of this malignancy and emphasize the need for early diagnosis.

## 56) A RARE CASE OF ISOLATED SPLENIC ARTERY DISSECTION WITH PARTIAL SPLENIC INFARCTION

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**Introduction:** Spontaneous isolated splenic artery dissections are rare with approximately 22 documented cases to date. Most reported cases also involve dissection of the celiac artery. Of the 22 cases with isolated splenic and celiac artery dissections, 14 showed splenic infarction with imaging. This is the first reported case of isolated splenic artery dissection with mild splenic infarction seen on CT. The only other case of isolated splenic artery dissection involved a patient with Factor V Leiden clotting disorder, who had around 60% of their spleen infarcted, requiring splenectomy.

**Case Presentation:** A 68-year-old male with past medical history of hypertension, COPD, opioid use on methadone, alcohol use presented to the ED with one day of sharp, sudden onset, severe left upper quadrant abdominal pain that radiated to his back. Physical exam revealed blood pressure of 152/84 mmHg, left upper quadrant tenderness to palpation and abdominal distension, rest of physical exam was unremarkable. CT Abdomen/Pelvis with contrast showed isolated dissection of splenic artery with resultant multifocal splenic infarcts as well as non-occlusive filling defect in main portal vein due to possible mixing artifact versus a non-occlusive thrombus. The patient received 300mg Plavix in the ED. The patient was admitted to the hospitalist service with vascular surgery consultation. The patient was managed non-operatively with blood pressure control through pain control, dual anti-platelet therapy (aspirin and clopidogrel), statin therapy and serial abdominal exams. Repeat Abdomen/Pelvis CT with contrast 48 hours later showed no change from initial imaging and the filling defect in the portal vein was determined to be due to mixing artifact. The patient's pain improved, and he was discharged home in good condition with minimal residual pain on hospital day two with outpatient follow up. Patient is scheduled to repeat imaging in one month with outpatient vascular surgery.

**Discussion:** Spontaneous visceral artery dissections are relatively uncommon with around 200 documented cases involving celiac artery since 2018 (most involve the SMA). The clinical presentation of artery dissection can vary. While some patients can be asymptomatic, others experience nonspecific abdominal, back, flank, or chest pain accompanied by nausea and vomiting. Risk factors for celiac and splenic artery dissections include hypertension, male sex, average age of 55, and connective tissue disorders. Most spontaneous dissections, as with our patient, are attributed to hypertension. There are currently no established guidelines for managing patients with splenic artery dissection. The consensus in the literature is that celiac or splenic artery dissections are treatable in 75% to 90% of the cases with only observation, blood pressure control, and antiplatelet and/or anticoagulation, with the duration of follow-up imaging findings left to the discretion of the healthcare provider. Surgical or endovascular management is reserved for cases of hemodynamic instability, persistent abdominal pain, or progression of the dissection and end-organ ischemia. We hope that our unique case of an isolated splenic artery dissection with mild infarction and prompt improvement of patient's symptoms can help guide future management for similar cases.

## 57) CANDIDA AURIS AND PSEUDOMONAS KNEE INFECTION IN AN IMMUNOCOMPETENT INDIVIDUAL WITH MULTIPLE TOTAL KNEE ARTHROPLASTIES

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**Introduction:** Prosthetic joint infections are both common and problematic as a surgical complication. Joint replacements are becoming commonplace due to a largely aging population and the procedures potential for rapid improvement in quality-of-life postoperatively.[1] With increases in prosthesis implantation, understanding potential complications due to infection become crucial for safe and effective patient care. Among these infections, *Candida auris* has been of notable concern as a multidrug resistant pathogen, yet there are few reported cases of this infection along with a lack of a widely accepted treatment regimen.

**Case Presentation:** A 60-year-old immunocompetent male presented to our institution for right knee pain and gaping laceration exposing hardware after ground level fall one hour prior to arrival in the emergency department. The patient noted a past medical history of obese body habitus, HTN, and hypothyroidism. The patient had a surgical history of a proximal tibial osteotomy in 2009 with repeat revisions due to chronic infections complications. In 2015, the patient had undergone original total knee arthroplasty with relatively few initial postoperative concerns other than a rash on his right calf which was treated and resolved. Following this procedure, the patient underwent 14 revision surgeries between 2015-2023 for TKA failure and repeat Methicillin-Sensitive *Staphylococcus aureus* infections. Upon most recent presentation, the patient was admitted as his knee wound was open and his prosthesis was displaced. He was seen by orthopedics and taken overnight for operative reduction. Three intraoperative samples were taken and all three grew *Pseudomonas aeruginosa*. One of the patient's samples also grew an unknown yeast which was later identified as *Candida auris*. The patient was started on oral fluconazole 600mg daily which was later substituted for 200mg IV micafungin along with 2g IV cefepime after cultures.

**Discussion:** The present case displays recurrent proximal joint infection with multiple revision surgeries and previous infection with MSSA. His course was complicated with trauma resulting in wound dehiscence with current co-infection of *Candida auris* and *Pseudomonas aeruginosa*. *Candida auris* is known to be a major multidrug resistant nosocomial infection with increasing prevalence in Asia and the United States. [2,4] Despite its threat, this strain remains underrepresented as a cause for infection as many still struggle with correct identification, often confusing *Candida auris* as *Candida haemulonii*. [5. 6] Notable predisposing factors for *Candida auris* infection include diabetes mellitus in 41% of patients, recent surgery in 51%, central venous catheter in 73%, and concomitant antifungal treatment in 41% when they were found to have *Candida auris*. Additionally, *Candida auris* demonstrates a concerning 59% mortality.[7] There are relatively few cases of *Candida auris* infection, but of those which were documented, *C. Auris* displays resistance to treatments including fluconazole and amphotericin B. [7] Given these alarming factors and emerging trends, there should be greater vigilance in the evaluation of patients with repeat surgeries for fungal infection to ensure patient safety and treatment efficacy. *Candida auris* is particularly concerning when affecting patients with hardware in joint replacement infections due to its resistant and infectious nature necessitating continued interprofessional team care.

## 58) FOLLMANN BALANITIS: AN UNUSAL CASE OF SYPHILIS

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*Treponema pallidum* is a sexually transmitted infection, STI, that has been on the rise in the United States and internationally. In the US, minority women tend to experience higher infection rates, and internationally, there has been a concerted effort to improve testing and screening in low- and middle-income countries. With the increased incidence worldwide, greater vigilance is needed for atypical presentations of syphilis.

A 33-year-old heterosexual man with history of herpes simplex virus (HSV) infection presented to the emergency department with suprapubic abdominal pain and small painful lesions on his foreskin for the last day. He was tested for a STI in 2018 owing to concerns about penile discharge, which was negative. On physical examination, painful linear lesions on the foreskin of the penis were noted. The lesions were swabbed for HSV, and the patient was discharged home with prescriptions for lidocaine 2% jelly, meloxicam 7.5 mg, and valacyclovir 1000 mg. The patient saw his primary care provider for follow-up 1 month later because the lesions were not improving. He described persistent erythematous lesions with purulent discharge that would emerge and scab over. Valacyclovir 1g was continued three times daily for 10 days followed by suppressive course of 500 mg daily. Three months later, he was seen in the ED with signs of sepsis. He reported worsening abdominal pain, nausea, vomiting, fever, progressive penile lesions, dysuria, and was febrile and tachycardic. Physical examination revealed edema, erythema, and purulent erosive lesions. CT abdomen and pelvis with contrast, noted prominent bilateral inguinal lymph nodes. He was admitted with fluids and ceftriaxone 2 g in 0.9% NaCl intravenously and oral dose of fluconazole 150 mg while he was evaluated for STIs. He was then discharged with prescriptions for augmentin 875 mg and topical clotrimazole cream 1%. After discharge labs showed a positive RPR titer of 1:256 as well as positive treponemal IgG and IgM. On follow up with his PCP, the patient was successfully treated with weekly penicillin G injections (2.4 million units) for 3 weeks.

Follmann balanitis is an atypical presentation of primary syphilis originally reported in 1948 by Eugene Follmann defined as erosive balanitis with lymphadenopathy and positive serology for syphilis. While our patient did not have inguinal lymphadenopathy, CT of the abdomen found reactive nodes. Thus, serum testing is especially important in the diagnosis of syphilis as only 40% of cases present with typical characteristics. While studies from 1948 suggest that the incidence of syphilitic balanitis is around 0.3% 0.5%, recent studies estimate this presentation is much higher. Treatment with 2.4 million units of penicillin G benzathine intramuscularly has been the mainstay of therapy. A single dose is typically sufficient, and increasing dosages does not seem to result in faster clearance in healthy or immunocompromised patients. Doxycycline/tetracycline, ceftriaxone, and azithromycin are all alternatives in those who cannot tolerate penicillin or have concomitant STIs. Clinicians should keep syphilis in the differential diagnosis when a patient presents with balanitis or balanoposthitis to enable early intervention in the syphilis course and prevent long-term sequelae.



## 59) A DEBILITATING CASE OF VULVAR CROHN'S DISEASE

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**Introduction:** Crohn's Disease (CD) is chronic inflammatory bowel disease (IBD) characterized by transmural inflammatory lesions that can affect any portion of the gastrointestinal tract. This diversity in affected tissue is also demonstrated through the multiple extraintestinal manifestations including ocular, joint, cutaneous, hepatobiliary, pulmonary and cardiac complications. Vulvar involvement is a rare complication of CD which can result in significant symptoms and disability. We present a case of vulvar Crohn's disease to highlight the importance of recognition and advocacy for these patients.

**Case Presentation:** A 34-year-old female with a medical history of Crohn's disease status post proctectomy and total colectomy, anogenital granulomatosis secondary to vulvar CD (VCD), and endometriosis with history of prolapsed fibroids presented with persistent vulvar pain. The patient was initially admitted with vulvar pain and lesions that had been present for 8 weeks. Dermatology was consulted and recommended wound care including topical lidocaine for pain, topical steroids, topical antimicrobials, and barrier cream. Initiation of infliximab was strongly recommended but did not occur. For disease management, she was discharged on high dose prednisone 60 mg with a 5-week taper. The patient required oral opioids for pain management in addition to Tylenol. The patient presented 1.5 weeks later with concerns for progressive edema, pain, and disfigurement. Pain with urination was so severe it caused tremors; the patient had difficulty dressing, ambulating and was unable to work due to discomfort. The patient did not have any concerns for active bowel disease and denied abdominal pain, diarrhea, nausea, vomiting, or bloody stools. Examination revealed bilateral labial erythema, ulcerations, and knife-like fissures with purulent drainage. Labs revealed mild leukocytosis with left shift, chronic normocytic anemia, elevated ESR and CRP. MRI of the pelvis revealed changes in the subcutaneous perineal tissue suggestive of edema or inflammation, as well as a new vaginocutaneous fistula but no evidence of abscess. Gynecology and Dermatology were consulted and recommended initiation of infliximab as well as continuation of pain regimen and wound cares. The patient continued on a prednisone taper and started on metronidazole 500 mg TID to reduce inflammation. The patient received an initial dose of infliximab while inpatient which resulted in mild improvement in pain and inflammation. The patient was discharged in stable condition with continuation of topical treatments, prednisone taper and plans to continue metronidazole until receiving a third infliximab infusion.

**Discussion:** VCD is often under-recognized, and treatment is delayed because patients are referred to multiple specialists before a diagnosis is made. VCD can cause significant discomfort, disfigurement, and decreased quality of life. There are still no standard treatment guidelines for VCD as the disease course can vary widely between patients. Oral antibiotics (classically metronidazole), typically in combination with oral or topical steroids, are considered first-line treatment. Unfortunately, there have been reports of rapid vulvar lesion recurrence once antibiotic therapy is discontinued. Recently, significant clinical improvement has been reported with the use of monoclonal antibodies (such as infliximab) targeted against tumor necrosis factor alpha (Anti-TNF $\alpha$ ). Finally surgical revision is offered for some patients with refractory symptoms.

## 60) OBSERVATION IN NECROTIZING PANCREATITIS: SAFE AND EFFECTIVE

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**Background:** The management of necrotizing pancreatitis (NP) presents a serious challenge. No consensus on appropriate intervention approach and timing of intervention exists. Accordingly, we sought to assess the safety of observation in NP.

**Methods:** This is a single-center retrospective review of all adult (18 years) patients admitted with a computed tomography (CT) confirmed NP from 2016-2020. Electronic medical records were used to retrieve demographics, comorbidities, hospital course, CT scan findings, interventions, in-hospital complications, and 1-year outcomes. Overall missing data-points were low (<5%). Patients were divided into early intervention (intervention within 4-weeks of diagnosis) and observation.

**Results:** A total of 99 patients met the inclusion criteria, of which 35% were in the early intervention cohort. Overall, there was no significant difference in baseline characteristics, admission SOFA scores, or in-hospital organ failure. Compared to the observation cohort, the early intervention group had similar rates of infected or hemorrhagic NP. On multivariate analysis, the observation group was significantly associated with a shorter hospital length of stay (LOS) (Diff: -13.43; 95%CI: -24.09,-2.78 p=0.014) and intensive care unit (ICU) stay (Diff: -12.02; 95%CI: -20.83,-3.22; p=0.008) and a lower 1-year related readmission (Diff: -1.71; 95%CI: -3.05,-0.37; p=0.014). A total of 24 patients required intervention greater than 4 weeks after diagnosis. Compared to those who received early intervention, those who received late intervention had a similar LOS, ICU LOS, number of interventions, and 1-year related readmission and mortality rates (Table).

**Conclusion:** Initial observation for NP is safe and is associated with decreased LOS and 1-year readmission.

## 61) RECTAL MESH EROSION AFTER SINGLE-INCISION MIDURETHRAL SLING REPAIR: SURGICAL EMERGENCY OR BENIGN PROCESS?

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**Introduction:** This is a description of a rare case of “through and through” mesh erosion into the rectum after anterior colporrhaphy with single-incision (SI) mid-urethral sling (MUS) placement, which was subsequently removed transanally. While there are many reports of rectal mesh erosion after pelvic organ prolapse (POP) surgery, this is the first report to our knowledge of erosion of pelvic mesh into the rectum following MUS placement.

**Case:** A 75 year old female underwent anterior colporrhaphy and SI MUS placement with synthetic mesh. Six years later, she presented with right upper quadrant abdominal pain for weeks, which was thought to be due to a ventral hernia. During hernia repair, intraoperative colonoscopy revealed pelvic mesh eroding into the rectal lumen. No immediate treatment was undertaken at that time. Months later, the patient began endorsing abdominal pain, malaise, and weight loss. Flexible sigmoidoscopy redemonstrated the presence of mesh within the rectal lumen, entering one side of the rectal wall and exiting the other. Pelvic MRI did not identify an associated abscess. It was concluded that she would require surgery for definitive management. There was concern that the patient would require a partial proctectomy with mesh excision, presuming the mesh was already infected or at risk of infection. Due to the location, it was unclear if bowel continuity after resection would be feasible. Based on endoscopy, digital rectal exam, and MRI, it seemed possible to transanally excise the majority of the mesh without removing the rectum. Intraoperatively, subtotal transanal excision of the mesh was performed. While placing the mesh under tension, its entry and exit points were transected with scissors as close to the bowel wall as possible. The patient recovered well postoperatively without complications, and she remains asymptomatic 6 months after excision.

**Discussion:** In women with POP, about 80% will have coexisting stress urinary incontinence (SUI). Even in those without symptoms of SUI preoperatively, about 40% develop them following POP repair. As a result, it is vital for providers to discuss both POP and SUI prior to surgery, and many will opt to undergo a dual procedure. Although this was the course of action for our patient, her return to care was due to erosion of mesh originally placed to treat SUI.

A severe perioperative complication from SUI repair is mesh erosion. Multiple risk factors have been recognized, including the type of MUS procedure, graft type, degree of mesh tension, and various patient factors, such as past surgeries, smoking, and advanced age. Rectal mesh erosion poses significant risk for infection, sepsis, and bowel disease, therefore it requires prompt surgical management. There is no clear data supporting a particular surgical approach for its removal. Here, we report a rare case of rectal mesh erosion six years after MUS placement treated with subtotal transanal pelvic mesh excision since there was no evidence of pelvic abscess or sepsis.

## 62) LARGE MYCOTIC ANEURYSM WITH RETROPERITONEAL HEMATOMA IN THE SETTING OF LISTERIA BACTEREMIA

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**Introduction:** Approximately 1.3% of cases of aortic aneurysms in the Western world are mycotic in nature. Most are caused by gram-positive *Staphylococcus*, *Enterococcus*, *Streptococcus pneumoniae*, and *Clostridium* or gram-negative *Salmonella* species. Of the 18 cases of infectious aortitis cited in literature, only 9 are reported as abdominal aortic aneurysms. Listeriosis bacteremia leading to the rupture of an abdominal aortic aneurysm is an extremely rare finding associated with the infection. Here we present a case of listeria bacteremia leading to large mycotic aneurysm with retroperitoneal hematoma.

**Case Presentation:** A 74-year-old male with a complex past medical history significant for heart failure, coronary artery disease, peripheral artery disease, diabetes, chronic kidney disease, and pulmonary hypertension presented with fever, SOB, fluid overload, and fatigue. The patient was hypoxic, tachypneic, and febrile. Chest X-ray revealed cardiomegaly with mild pulmonary congestion and possible consolidation in the right midlung. With an admitting diagnosis of community-acquired pneumonia, the patient was started on empiric antibiotics.

On the third day, blood cultures confirmed the presence of *Listeria monocytogenes*. Given the patient's recurrent Listeriosis and adverse event to ceftriaxone, the patient was transitioned to linezolid. The patient's platelet counts were closely monitored as he had a history of thrombocytopenia while on the medication.

While on treatment, the patient developed increasing dyspnea and chest pain. A repeat chest X-ray showed new right lung opacities. CT chest without contrast was obtained revealing a new short segment dissection versus an intramural hematoma. CT angiography was deferred secondary to an elevated creatinine. A penicillin challenge was recommended due to concern of endovascular infection, and it was well-tolerated. The patient was switched to IV ampicillin.

On the sixth day of admission, the patient reported new abdominal pain and CT without contrast revealed retroperitoneal hemorrhage and thickening around the abdominal aorta. Stat CT angiography was performed, confirming acute to subacute ulcers in the distal aortic arch and a 4.9 cm irregular ulcer in the suprarenal abdominal aorta. Due to the patient's comorbidities, surgical intervention was not recommended, and medical management was started which involved six weeks of IV ampicillin. Dialysis and antibiotic lines were placed, and the patient received follow-up care from nephrology and physical/occupational therapy. After discharge, the patient continued home health care and outpatient dialysis.

**Discussion:** *Listeria monocytogenes* does not typically cause serious illness in immunocompetent individuals. Numerous studies suggest vulnerable aortic walls due to arteriosclerosis increases the chances of developing a mycotic aneurysm. The bacteria can infiltrate the cardiovascular system in various locations including the vaso vasorum of the arterial walls, vulnerable tunica intima, arteriosclerotic plaques, or thrombus material. The patient's history of arterial disease placed him at high risk for developing a ruptured mycotic aneurysm. Overall, this case highlights several key learning points. Firstly, awareness for recurrent Listeriosis needs to be increased amongst clinicians. Secondly, early workup for endovascular complications is paramount. Lastly, although worsening complications while on treatment is rare, heightened clinical suspicion for this uncommon presentation of retroperitoneal hemorrhage in the setting of contained abdominal aortic aneurysm is vital.

## 63) SARCOIDOSIS: CONSIDERATIONS IN MANAGEMENT

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**Introduction:** Sarcoidosis is a multisystem, inflammatory disorder that is most commonly characterized by non-caseating granuloma formation. In most cases, sarcoidosis affects the lungs, causing diffuse interstitial lung disease; however, extrapulmonary manifestations are frequently seen, including those affecting the eyes, skin, lymph nodes, liver, spleen, cardiovascular, musculoskeletal, and nervous systems. Glucocorticoids and steroid-sparing agents are the mainstay of treatment. Many patients experience resolution of symptoms with treatment, but organ failure develops in up to 10% of cases.

**Case Description:** This was a 61 year-old female with history significant for pulmonary sarcoidosis, asthma, cirrhosis, housing instability, and active inhaled substance use on daily methadone, who presented with bilateral eye pain and decreased visual acuity for one week and chronically worsening shortness of breath. Notably, the patient had been hospitalized 3 months prior for treatment of a pulmonary sarcoidosis flare. She was discharged at that time with plans to complete a prednisone taper but reported challenges with completing this regimen and was unable to follow up in clinic. Some of her barriers to seeking care included unreliable cell phone service and challenges with coordinating transportation. Initial vital signs were stable and physical examination was notable for hypoxia on exertion, diminished breath sounds without wheezing, pigmented nodules on the lower extremities consistent with resolving erythema nodosum, injected conjunctivae bilaterally, with severe ocular tenderness, photophobia, and significantly reduced visual acuity of the left eye. Slit-lamp examination showed significant anterior chamber cell reaction with diffuse scattered keratic precipitates bilaterally, consistent with anterior uveitis. Labs were notable for ESR of 107 and CRP of 3.1. Chest CT showed fibrosis with associated traction bronchiectasis, with increased peribronchiolar ground-glass opacity and worsening confluent opacities in the left upper and right lower lobes. Infectious causes of her pulmonary symptoms and anterior uveitis were ruled out and ultimately, her symptoms were attributed to a pulmonary sarcoidosis flare with new extra-pulmonary ocular and dermatologic manifestations. She received prednisolone and cyclopentolate eye drops and was started on 40mg oral prednisone, with some improvement in symptoms while hospitalized. Because of a contraindication to methotrexate other immunosuppressive agents including azathioprine were considered, however, given the need to minimize the frequency of out-patient monitoring, the patient was started on infliximab infusions that were continued after discharge.

**Discussion:** Sarcoidosis is a multisystem inflammatory disease that can cause debilitating symptoms in severe cases. Prevention of flares can be particularly challenging when there are logistical barriers to follow-up. This case highlights the importance of understanding the social constraints that influence a patient's ability to adhere to treatment and seek follow-up care, which in addition to medical factors, helped inform the long-term management plan in this case.

## 64) A CASE OF BILIARY OBSTRUCTION AT THE COMMON BILE DUCT CAUSED BY A NEUROENDOCRINE TUMOR

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**Introduction:** Malignancy of the biliary tract should be considered on the list of differential diagnoses for patients presenting with obstructive jaundice, especially in older patients. Of all biliary tract malignancies, cholangiocarcinoma makes up the vast majority (>80%). Neuroendocrine tumors (NET) are a rare subset of malignancies in the biliary tract that may have an aggressive or an indolent course. Early detection and treatment of NET in the biliary tree can potentially result in curative treatment.

**Case Presentation:** A 93-year-old Caucasian female with a history of hypertension, type II diabetes, coronary artery disease, and duodenal ulcer presented to the emergency department for 4 days of RUQ abdominal pain with associated nausea, jaundice, and brown-colored urine. She did not report vomiting, diarrhea, or notable weight loss.

The patient appeared jaundiced and had abdominal distension with RUQ tenderness. A mixed pattern of liver injury (R factor 2.4) with AST and ALT greater than 10 times the ULN, ALP greater than 5 times the ULN, and direct hyperbilirubinemia was noted, while prothrombin time/international normalized ratio was normal on initial tests. Mildly elevated titers of alkaline phosphatase (107-117 U/L; ref 35-104 U/L) with normal levels of ALT and AST were noted on multiple laboratory studies during a 16-month timeframe prior to her presentation. A urine study showed elevated urobilinogen and large amounts of bilirubin. A CT scan revealed a soft-tissue lesion within the distal-most aspect of the common bile duct and papilla with marked intra hepatic and extra hepatic bile duct dilatation, variable pancreatic duct dilatation, and multiple hepatic lesions of varying sizes. A dedicated CT scan with contrast measured the mass at 1.9 x 1.5 x 1.9 cm. CA 19-9 was markedly elevated (2,694.0 U/mL; ref <35.0 U/mL).

An endoscopic ultrasound revealed a predominantly hypo echoic mass within the distal bile duct that measured 20 mm and caused significant biliary dilation (27 mm). The biliary stricture was palliated with a stent via endoscopic retrograde cholangiopancreatography (ERCP). Biopsies taken from the biliary mass were consistent with a well-differentiated NET; World Health Organization (WHO), Grade 3 (frequent mitotic figures; 90% Ki-67 proliferative index). The patient was minimally symptomatic after stenting and discharged home two days later. She ultimately decided not to pursue further treatment.

**Discussion:** NET are estimated to account for less than 2% of all cancers in the extrahepatic biliary tree as this mucosa lacks or is scarce in enterochromaffin progenitor cells that NET typically arise from. The incidence, prevalence, and overall survival of NET in general has risen over the last few decades in all age groups, likely due to earlier detection and improvement in therapies. Surgical excision is considered the main and only curative treatment for localized NET, although chemotherapy and radiation therapy are suitable adjuvant treatments. This case can help characterize the progression and presentation of extrahepatic biliary NET. In this case, there was an indolent course and a late presentation, emphasizing the need for early detection of these rare NET.

## **65) DORSAL ROOT GANGLION STIMULATION (DRG-S) FOR POTENTIAL RESOLUTION OF RESTLESS LEG SYNDROME SYMPTOMS AND INCREASED COST SAVINGS FOR PATIENTS: A CASE STUDY**

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An 82-year-old male patient presented with a long-standing history of restless leg syndrome (RLS), also known as Willis-Ekbom disease. RLS is a condition characterized by an irresistible urge to move the legs due to uncomfortable sensations. His symptoms included intractable 8/10 burning pain and restless leg activity which was more pronounced at night, especially during sleep. Despite multiple attempts at managing the patient's symptoms with medications and lifestyle changes, his RLS persisted, significantly impacting his quality of life due to the magnitude of appointments and medical attention that he required. This case study aims to demonstrate the effectiveness of dorsal root ganglion stimulation (DRG-s) neuromodulation in managing RLS, a condition that is often difficult and costly to treat. This treatment involves the placement of a small device in the DRG, which are nerves near the spinal cord that carry sensory information from the periphery of the body to the brain. The device automatically delivers electrical impulses to the DRG to alter and decrease pain perception in the brain.

Our case report elucidates the use of this technology as a targeted therapy for RLS, with a nearly 90% reduction in reported symptoms in our patient. Prior to receiving DRG-s therapy, the patient had to be managed with monthly pain medications and injection therapies in the clinic, which the patient felt interfered with his overall quality of life. The annual healthcare costs for our patient were calculated to be around \$22,120 per year until the DRG-s was implanted. Since DRG-s, he has been off all pain medications and has had no need for further clinic visits. His overall saving on healthcare spending can be extrapolated over a 10-year period, which is the battery life of the implant. Historically, the stock market has returned an average of around 10% per year, but a 5% discount rate was used in our study as a conservative estimate. Using the present value formula ( $PV = FV / [1 + r]^n$  where  $PV$  = present value or savings,  $FV$  = future value [i.e. 22,120 per year],  $r$  = discount rate [5% or 0.05], and  $n$  = number of years) there was an estimated savings of nearly \$153,817 for our patient following DRG-s.

In conclusion, this case study has demonstrated the potential of DRG-s as a promising treatment option for RLS, as it has been shown to be highly effective in reducing pain and dysfunction, medication utilization, and cost over time. Additionally, the use of DRG-s in conjunction with other analgesic modalities may lead to a more targeted pain management approach and improved patient satisfaction with RLS treatment options. The authors acknowledge the limitations of this case study to a single patient but believe that it is important to disseminate this potentially viable therapy for RLS. Further research is needed to confirm the long-term safety and effectiveness of this technology in the treatment of RLS.

## 66) IGA VASCULITIS REVEALING ITSELF WITH A RASH AMID BACTEREMIA AND OPIOID WITHDRAWAL

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**Introduction:** IgA vasculitis is a small vessel vasculitis classically presenting with cutaneous purpura, arthritis, GI symptoms, and kidney disease. IgA vasculitis rarely affects adults, with an incidence of 0.8-5.1 per 100,000, and literature is lacking for adult-onset disease. Renal involvement is most prominent in adult-onset IgA vasculitis. We present a case of adult-onset IgA vasculitis without renal involvement in the setting of treatment for *Staphylococcus aureus* bacteremia and endocarditis.

**Case Presentation:** A 22-year-old female with history of IV opioid use presented to our hospital with *Staphylococcus aureus* bacteremia and tricuspid valve endocarditis, for which she was treated with oxacillin. Her hospital course was initially complicated by opioid withdrawal and anemia due to melena and hemoptysis. She reported generalized abdominal pain, nausea/vomiting, diarrhea, and arthralgias, which were attributed to opioid withdrawal. She also developed new onset left knee pain and swelling concerning for secondary septic arthritis. Synovial fluid studies were consistent with inflammatory arthritis. Following a blood transfusion, she developed non-pruritic, erythematous papules coalescing into plaques on her left arm and bilateral lower extremities. There was concern for reaction to the blood transfusion, drug effect, or sequelae of endocarditis given timing of onset. Antibiotics were changed to cefazolin, and the skin lesions progressed to a deeper red/purple color and became pruritic over the next two days. A skin biopsy demonstrated leukocytoclastic vasculitis with IgA deposits, consistent with IgA vasculitis. Urinalysis was without proteinuria or hematuria, with normal renal function throughout her 6-week hospital course. She was treated with topical steroids, with resolution of her skin lesions, abdominal pain, arthritis, and gastrointestinal bleeding.

**Discussion:** This case represents an unusual presentation of IgA vasculitis in an adult with lack of renal involvement and with opioid withdrawal as a confounding factor. IgA vasculitis has significant overlap with symptoms of opioid withdrawal, with diffuse abdominal pain and arthritis/arthralgias being common symptoms of each. The rarity of adult-onset IgA vasculitis masked by the clinical picture of opioid withdrawal could render IgA vasculitis easily missed without cutaneous manifestations. For example, this patient's anemia and abdominal pain were best explained by IgA vasculitis-associated GI bleeding. Most cases of IgA vasculitis are idiopathic, whilst only 25% of cases have identifiable triggers with infection and drugs (specifically beta-lactams) as common culprits. *Staph aureus* bacteremia and oxacillin are less common causes of IgA vasculitis but are the most likely causes in this case. Literature has demonstrated a less complicated course of IgA vasculitis with known precipitating factors. Recalcitrant disease is more common in adults with a parallel increase in mortality, and close monitoring of systemic disease after onset is essential, especially for development of renal dysfunction. There is no role for prophylaxis in IgA vasculitis and treatment is based on systemic manifestations and supportive care. Further studies are necessary to better understand the causes and treatment of adult-onset IgA vasculitis. It is important to consider IgA vasculitis as a complication in adult patients with infections undergoing treatment with a prolonged course of antibiotics.



## 67) DON'T GET BIT BY AN ABBREVIATED HISTORY: AN UNUSUAL CASE OF ILIAC ARTERY ANEURYSM

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**INTRO:** *Capnocytophaga canimorsus*, part of the gingival flora of cats and dogs, causes rare but severe human infections. Infection is characteristically acquired through dog bites and most commonly presents as sepsis, but also as difficult to diagnose cardiovascular and central nervous system infections.

**CASE:** A 67-year-old woman with a past medical history of mild uncomplicated alcohol use disorder presented with one week of right lower quadrant abdominal pain and nausea. Vital signs were normal. Physical examination was notable for abdominal discomfort with escalation after palpation. Computed tomography with contrast of the abdomen showed hydronephrosis and dilation of the right ureter, dilation and wall thickening of the iliac artery, and inflammatory changes in the surrounding soft tissue of the iliac artery. Positron emission tomography scan using fluorodeoxyglucose showed intense radiotracer uptake in and around the right iliac artery. Intravenous ceftriaxone and vancomycin were started empirically.

Surgery was performed to stent the right ureter, resect the aneurysm, and reconstruct the iliac artery using a cadaveric tissue graft. Extended blood cultures, after 42 days and using specialized culture media, failed to reveal a microbiologic etiology. Broad-range bacterial 16s ribosomal ribonucleic acid (rRNA) polymerase chain reaction of surgical specimens was performed and revealed the *Capnocytophaga canimorsus* genetic material. With this information, the history was reviewed, and the patient recalled sustaining a dog bite 2 months prior to presentation, solidifying the diagnosis of *Capnocytophaga canimorsus* infection. After 6 weeks of intravenous ceftriaxone, 6 months of oral penicillin was completed with no persistent signs of infection.

**DISCUSSION:** *Capnocytophaga canimorsus* can cause life-threatening infections but is challenging to diagnose by standard microbiologic techniques because it does not grow readily on culture media. Molecular diagnostic methods such as 16s ribosomal ribonucleic acid (rRNA) broad-range bacterial polymerase chain reaction offer more sensitive and rapid results to guide treatment.

## 68) A CASE STUDY OF HYDRALAZINE-INDUCED HEMOPTYSIS

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**Introduction:** Hydralazine, a common antihypertensive medication, can rarely be associated with autoimmune phenomena such as drug-induced lupus and ANCA-associated vasculitis. Both disease processes can present with rash and inflammation of the lungs and kidneys. We discuss a patient with chronic transfusion-dependent anemia, hemoptysis, acute kidney injury, and strongly positive ANA and p-ANCA, ultimately found to have hydralazine-induced vasculitis whose atypical presentation resulted in delayed diagnosis and treatment. The patient's course was also complicated by *Acinetobacter* pneumonia, chronic hepatitis C virus (HCV) and latent tuberculosis infection, congenital solitary kidney, and renal cell carcinoma.

**Case Description:** Our patient is a 64-year-old male with a history of pulmonary embolism on apixaban, congenital solitary kidney, recently diagnosed renal mass, type 2 diabetes mellitus complicated by nephropathy, hypertension, and former tobacco use presenting with dyspnea, hemoptysis, and acute kidney injury. The patient endorsed shortness of breath and fatigue, as well as intermittent blood-streaked sputum. He had undergone an extensive work-up for dyspnea, hemoptysis, and anemia over the preceding 10 months, including a bronchoscopy that showed pulmonary nodules without active hemorrhage and laboratory testing which revealed weakly positive ANA (1:80), p-ANCA, HCV antibody and viral load, indeterminate interferon gamma release assay (IGRA), and abdominal CT showing a renal mass. He was diagnosed with systemic lupus erythematosus (SLE) and was started on prednisone and hydroxychloroquine without improvement in symptoms.

Upon admission, the patient was found to be anemic requiring blood transfusion and underwent a second bronchoscopy which found diffuse alveolar hemorrhage (DAH) with lymphocytic predominance. Laboratory work-up revealed strongly positive ANA (1:64), pANCA >1:640, beta 2 glycoprotein IgM, anti-cardiolipin IgM, lupus anticoagulant, myeloperoxidase antibody, low C3 and C4 (complement) levels, and weakly positive anti-histone antibody. Infectious work-up revealed *acinetobacter calcoaceticus-baumannii* complex in his bronchoalveolar lavage, positive HCV antibodies with negative cryoglobulin testing, and indeterminate IGRA testing with negative acid-fast smears concerning for latent *mycobacterium tuberculosis* infection. A biopsy of the renal mass was obtained which demonstrated renal cell carcinoma.

**Management and Outcome:** Ultimately, the patient was thought to have hydralazine-induced lupus or hydralazine-induced p-ANCA vasculitis. Concurrent anti-phospholipid antibody syndrome was considered as a possible cause of the patient's prior pulmonary embolism, given that beta 2 glycoprotein IgM, anti-cardiolipin IgM, and lupus anticoagulant were present. The patient will follow up in hematology clinic for repeat anti-phospholipid testing to definitively evaluate for this diagnosis. Lastly, the patient's active malignancy was considered as an additional contributing cause of hypercoagulability.

Hydralazine was discontinued. Treatment was started for the patient's latent tuberculosis, hepatitis C, and *Acinetobacter* infections. High dose methylprednisolone treatment was initiated with eventual transition to rituximab steroid-sparing therapy. The patient was discharged on his previously initiated apixaban therapy given no definitive diagnosis of antiphospholipid antibody syndrome was made during hospitalization.

**Discussion:** Hemoptysis due to hydralazine-induced vasculitis is a rare condition with a broad diagnostic differential including autoimmune, medication-induced, infectious, and neoplastic etiologies of vasculitis. We hope that this case will inform future practice in the diagnosis and treatment of medication-induced vasculitis.

## 69) AN ATYPICAL PRESENTATION OF A RARE SUBSET OF COLORECTAL CANCERS

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**Case Presentation:** A 72-year-old male with a past medical history of pT4b, pN0, pMX medullary carcinoma with colonic perforation status post right hemicolectomy in 2021 presents with a chief complaint of rectal bleeding. Biopsy of right hemicolectomy in 5/2021 showed medullary carcinoma staged as pT4b, indicating adherence to duodenum and pancreas. The report also indicated that tumor cells have nuclear expression of MLH1, PMS2, MSH2, and MSH6. MSI stable. Patient was lost to oncologic follow-up outpatient.

On admission 5/2022, patient reports abdominal pain since March 2022 and worsening burning sensation after meals. The patient endorsed 10 days of melanotic stools prior to admission with persistent shortness of breath and nausea symptoms. The patient's hemoglobin on admission was 8.3 g/dL, with a baseline of ~15 g/dL.

Patient obtained CT Abd/Pelvis with contrast indicating a 12.6cm mass involving the distal stomach, duodenum, and pancreas. A 2.8cm pancreatic body mass was also observed, indicating likely metastatic disease to the pancreatic body. The patient then underwent an EGD demonstrating extrinsic compression of stomach and duodenum (Figure 1-3). Biopsy results of the mass revealed metastatic colonic adenocarcinoma with medullary features. Per pathology report, the malignant cells are positive for calretinin, but negative for CK20 and CK7. MMR IHC indicates expression of MLH1, PMS2, MSH2, MSH6. The patient's CEA was elevated at 28.4 and cancer antigen 19-9 elevated at 64.8. Cancer antigen 125 was at 20.4 and AFP at 1.1, both within normal limits.

**Discussion:** Colorectal cancer (CRC) is one of the most common causes of cancer mortality worldwide. It represents approximately 10% of all cancers but is the second most common cause for cancer related deaths. Medullary carcinoma represents a very rare subset of mismatch repair deficient CRC, accounting for about 0.03% of sporadic CRC. While medullary carcinoma of the colon (MCC) demonstrates similarities to poorly differentiated (PDA) and undifferentiated colorectal adenocarcinomas (UDA), it retains distinct clinicopathologic features. MCC is more common in females with a right-sided CRC finding that is typically positive for microsatellite instability (MSI). MCC prognosis is typically more favorable as the incidence of lymph node metastasis is lower than in PDA/UDA. Morphologically, MCC reveals large nuclei and nucleoli with lymphocytic infiltrate, whereas PDA/UDAs show more pleomorphic features with glandular differentiation.

Our patient presents with a unique case of being a microsatellite stable male with MCC metastasized to the pancreas, as indicated by the patient's new onset pancreatic mass findings. MCC is treated in the same manner as CRC, options including surgery and chemoradiation. In this specific presentation, the patient's next steps of treatment are pending upon outpatient follow-ups. However, the patient has indicated a preference for focusing on comfort care instead of life prolonging palliative therapeutic options.

**Conclusions:** This case of MCC is unique due to its presentation in a male, identification of MSI stability, and evidence of metastatic progression of disease. While determination of MCC may be difficult to differentiate and diagnose from other CRC subtypes, analyzing the clinicopathologic features and MMR gene function can help specify the diagnosis.

## 70) REMOTE PATIENT MONITORING: FACTORS OF ENGAGEMENT WITH A MOBILE APPLICATION

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**Background:** Consumer satisfaction is largely dependent on convenience, efficiency, and quality, and healthcare is no outlier. Technological advancements, such as the use of artificial intelligence or virtual visit appointments, are emerging as a new form of healthcare provided. While these technologies have existed far before the COVID - 19 pandemic, it has expedited the mass population's acclimation to digital therapeutics within healthcare. One such technology is remote patient monitoring (RPM) which allows healthcare providers to track and follow a patient's health status without their physical presence in a healthcare setting. RPM can be achieved through mediums such as wearable devices, sensors, and mobile applications. RPM appears to keep up with the times as it allows patients to be in the comfort of their own homes, provides real-time feedback to providers, and improves patient health.

**Purpose:** Previous studies of RPM programs explore their efficacy. Studies show that RPM programs can potentially have large benefits within the healthcare ecosystem as they can lead to a lower number of hospitalizations, decrease the risk of readmissions, and reduce costs. However, limited research delves into the factors that affect patients' engagement with RPM. Therefore, the purpose of this investigation is to assess factors that affect user engagement with the implementation of an innovative RPM program.

**Description:** GetWell Loop (GWL) is a mobile health application serving as an RPM program within the Froedtert Health system where post-discharge hospitalized patients had the option of being enrolled in the GWL service. Through this mobile app, patients were able to update their providers regarding their day-to-day health status through virtual questionnaires, submit questions, and receive feedback in real-time.

Inpatient hospital discharges within the Froedtert health system between March 2020 - November 2020 were stratified on readmission risk (low, medium, high). Low risk patients were offered access to GWL, while moderate risk and high risk patients were offered access to GWL and conventional care coordination. Demographic data was obtained from EPIC, while GWL usage was obtained from the GWL database.

Various demographic variables were analyzed such as patient age, patient sex, marital status, and risk level for hospital readmission. Engagement was defined as an engagement score of greater than 50%. This number is a calculation of the number of touchpoints the user engaged with the application compared to the total number of touchpoints offered by the GWL application. Chi-squared tests were used to determine the relationship between patient demographics and GWL engagement. Chi-squared test was then used to determine statistically significant factors that impacted patient engagement with GWL.

**Conclusions:** Preliminary data suggest that patients with low risk level for readmission are more likely to engage with GWL than medium and high risk patients. No significant differences in engagement between age, sex, race, marital status, area of deprivation index, and insurance provider. This provides valuable insight into which demographic of patients can benefit from using an RPM to improve post-discharge care. Allows an opportunity to provide digitally focused care to improve patient care, achieve higher patient satisfaction, and better outcomes

## 71) THE RACE TO SAVE LIVES: A COMPARATIVE ANALYSIS OF LEAD TIME FOR DETECTING CLINICAL DETERIORATION BETWEEN CLINICIANS AND ARTIFICIAL INTELLIGENCE

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**Introduction:** In the context of patient safety in hospitals, a significant number of adverse events are identified, with a considerable portion being preventable. Timely detection of potential clinical deterioration events (CDEs) is crucial for mitigating or preventing adverse outcomes. The availability of electronic health records (EHRs) has facilitated the implementation of Artificial Intelligence (AI) algorithms known as “early warning systems” (EWS) for early detection. For an EWS to effectively improve outcomes, it must accurately predict adverse outcomes, do so ahead of clinicians and provide sufficient lead time for intervention. In this study, we evaluated the performance of a widely used EWS, the Epic Deterioration Index (DI), in terms of its ability to provide early warnings before clinicians and its lead time for intervention.

**Methods:** Our study was conducted at a large academic medical center. The DI operated in the background, without direct visibility to frontline clinicians. This allowed us to compare the performance of unaided clinicians with the DI concurrently. We analyzed inpatient admissions from 03/01/2022 to 08/31/2022. Out of 21,880 admissions, 18,431 were excluded based on non-CDE hospital course, and 2,813 were excluded as ICU transfers. From the remaining 636 patients, we selected those who experienced a rapid response call or a cardiopulmonary arrest and determined the occurrence of definite or likely CDEs based on established criteria. We retrospectively examined the 72-hour period preceding the CDE to identify the time when clinicians initially recognized the potential clinical deterioration through order and documentation reviews. The lead time for unaided clinicians was calculated based on the first instance of recognition. The DI, running invisibly in the background, assigned patients to low, moderate, or high-risk categories for experiencing a CDE. We identified the first transition from low to moderate/high risk that persisted for at least 1 hour as a signal for potential CDE and used it to calculate the lead time provided by the DI. Comparative analyses were conducted using chi-square and independent t-test calculations.

**Results:** Out of the 100 patients who experienced definite or likely CDEs, 81 cases were recognized by either DI or unaided clinicians. The DI identified a CDE in 38 cases, while unaided clinicians detected potential CDEs in 57 cases ( $\bar{I}\ddagger 2 = 7.2$ ,  $p < 0.01$ ). On average, clinicians had a lead time of 9.13 hours, while the DI provided a lead time of 4.60 hours ( $p < 0.01$ ). Thus, clinicians detected potential CDEs, on average, 4.53 hours earlier (95% CI [1.41, 7.74]).

**Conclusion:** Our findings indicate that clinical judgment has not been entirely superseded by commonly used AI. Unaided clinicians detected potential CDEs more frequently and had significantly longer lead times compared to the DI. However, a notable minority of cases demonstrated that the DI outperformed clinicians in terms of speed. Therefore, while AI should not replace human efforts, it can be a valuable adjunct if appropriately implemented.

## 72) CROHN'S DISEASE INITIALLY PRESENTING WITH ANTERIOR SCLEROUVEITIS

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Crohn's disease is an inflammatory bowel disease that most often presents with weakness, fatigue, long-term diarrhea with abdominal pain, and variations in weight. It can affect the entire gastrointestinal tract from the mouth to the anus and demonstrate symptoms ranging from mild to severe in quality. Patients can also present with ophthalmic inflammatory disorders in less than 7% of cases.

A 32-year-old male presented to the ED due to right eye pain and redness for four days. Other symptoms included vision changes described as clouding and small blurry circles. Ophthalmology examined the patient and found injected conjunctiva, photosensitivity, and tenderness to the globe of the eye. The patient was diagnosed with right eye anterior sclerouveitis and started on cyclopentolate, prednisolone acetate, and naproxen. The patient was discharged home the same day.

The patient returned to the emergency department six days later due to bloody stool. His bowel movements contained bright red and maroon blood with occasional LLQ abdominal pain. A CT of the abdomen/pelvis revealed nonspecific fluid in the left colon consistent with enteritis. A colonoscopy revealed areas of skip ulceration and cobblestoning throughout the colon along with ulcerations in the transverse ileum. An infectious workup was performed and was negative.

The patient was diagnosed with ileo-colonic Crohn's disease; biopsies confirmed this diagnosis. The patient was started on solumedrol and pantoprazole. After three days he was transitioned to daily prednisone. The patient was discharged on prednisone and will follow-up with GI to determine maintenance therapy.

The underlying pathophysiology of Crohn's involves inflammation of the gastrointestinal tract, with the most common symptom of this diagnosis being chronic diarrhea. Other hallmark symptoms of this diagnosis include abdominal pain (often localized to the right lower quadrant of the abdomen) and fatigue. While rectal bleeding is less common in Crohn's disease, it can be found in more severe cases of this diagnosis.

Up to 70% of patients with inflammatory bowel disease can also exhibit extraintestinal symptoms. However, ocular complications tend to occur in less than 10% of all cases with less than 1% of cases involving the sclera. Ocular complaints can often be nonspecific and easily misdiagnosed, making evaluation of the eye a critical routine component for patients with Inflammatory Bowel Disease (IBD). These ocular symptoms, including blurred vision, teary/burning/itching eyes, and ocular pain, can precede a diagnosis of Crohn's disease.

While the exact pathogenesis of ocular manifestations due to Crohn's disease is unknown, one theory is that ocular inflammation is caused by an immune complex-type hypersensitivity reaction to a colonic antigen. This theory could help explain why patients with colitis or ileocolitis may be more likely to have ocular manifestations than patients that purely have small bowel involvement.

While this patient demonstrated some risk factors for ocular involvement (including his active underlying case of IBD), he had rare involvement of the sclera. Prompt treatment of his Crohn's disease should decrease his risk of developing recurrent ocular manifestations in the future.

### 73) THYMIC HYPERPLASIA FOUND INCIDENTALLY IN YOUNG ADULT WITH HYPERTHYROIDISM

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Grave's disease is an autoimmune condition that is commonly associated with other autoimmune conditions including myasthenia gravis, type 1 diabetes mellitus, vitiligo, Sjogren syndrome, and systemic lupus erythematosus. It has also been found to have an association with thymic hyperplasia in up to 38% of cases. Typically, the thymic enlargement is minimal and found incidentally when chest imaging is done for unrelated reasons; massive enlargement of the thymus is infrequently reported. This case report will highlight a young adult found to have thymic hyperplasia with newly diagnosed hyperthyroidism.

The patient is a 21-year-old female with a history of atopic dermatitis who presented with a chief complaint of rash of the arms and face (found to be allergic contact dermatitis). In the ED, the patient was tachycardic, mildly hypertensive, and reported intermittent dyspnea; this raised suspicion for a pulmonary embolism. Therefore, a CT PE was ordered which showed thyromegaly and an anterior mediastinal soft tissue mass with morphology suggesting thymic origin. Upon further questioning, the patient endorsed a history of heat intolerance, restlessness, mild tremor, diarrhea, and weight loss. The patient subsequently underwent thyroid labs which showed an elevated free T4 ( $>7.77$  ng/dL) and low TSH ( $<0.005$  uIU/mL). Endocrinology was consulted and the patient was diagnosed with hyperthyroidism, likely due to Grave's disease given her suspected thymic hyperplasia and diffuse thyromegaly. The patient was started on methimazole and atenolol with improvement in her symptoms and normalization of her heart rate and blood pressure. MRI chest was done to further characterize the patient's anterior mediastinal mass and showed thymic hyperplasia, most likely secondary to her hyperthyroid state. No further interventions or biopsies were indicated as the MRI results were not indicative of an underlying cancer, and the patient will undergo repeat CT chest in 6 months to monitor the thymic hyperplasia and assess for improvement.

There has been a known association between thymic hyperplasia and Grave's disease for over one century; this association was recognized by Dr. William Halsted in Transactions of the American Surgical Association in 1914 and Hammar in 1929. However, while this association has been known for many years, there are still relatively few cases reported in the literature. As of 2014, there were only 107 documental cases of massive thymic hyperplasia in patients with Grave's disease. While the exact pathogenesis leading to thymic hyperplasia in patients with hyperthyroidism is unknown, it is believed to be related to a direct trophic effect from excess thyroid hormones, as well as autoimmunity from thyrotropin receptor antibody. This autoimmunity likely leads to increased proliferation of cortical epithelial and medullary lymphoid follicles.

Thymic hyperplasia related to Grave's disease is a benign condition and typically resolves with treatment of the hyperthyroidism. This is most often accomplished through medical therapy but can also include invasive interventions if the mass persists despite resolution of the thyrotoxicosis. Therefore, once initiating medical treatment for Grave's disease, patients should be followed with serial imaging until there resolution of the thymic mass is observed.

## 74) POROCARCINOMA: A RARE CUTANEOUS MALIGNANCY

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**Introduction:** Porocarcinoma (malignant eccrine poroma) is a cutaneous neoplasm arising from the intraepidermal duct (acrosyringium) of sweat glands. First reported in 1969 and currently accounting for 0.005% to 0.01% of all cutaneous malignancies, porocarcinoma remains an exceedingly rare cutaneous malignancy.

**Case Presentation:** We present the case of a 79-year-old female patient with a past medical history of hypertension and type II diabetes who came in with a nonhealing skin lesion. A couple of years prior to presentation, the patient noticed a wart-like growth on her right anterior thigh and treated it with over-the-counter wart remedies with no improvement. The lesion then grew rapidly over the few months preceding her appointment. On examination, there was a 2x2.2 cm raised, hyperkeratotic, slightly excoriated lesion. A differential diagnosis of squamous cell carcinoma versus basal cell carcinoma was considered, and a shave biopsy was performed. However, the pathology revealed an exophytic proliferation of atypical neoplastic cells with scattered duct like structures that were highlighted by CEA (carcino embryonic antigen) on immunoperoxidase staining, confirming a diagnosis of superficially invasive porocarcinoma. Given the aggressive nature and higher risk of metastasis of this very rare skin cancer, the patient was referred by Dermatology to Surgical Oncology and underwent wide local excision (WLE) as well as sentinel node mapping of the right inguinal nodes.

**Discussion:** Porocarcinoma (malignant eccrine poroma) is a malignant appendageal skin tumor arising from the sweat glands. Porocarcinoma is more prevalent in adults between the ages of 50 to 80 and occurs most commonly on the lower extremities and head and neck region. About 18-50% of porocarcinomas arise within a preexisting benign poroma and present as dome-shaped papules, plaques, or nodules. It is an aggressive malignancy with both high recurrence and metastasis rates of up to 20%, as well as a high mortality rate of about 67% in patients with lymph node involvement. Mortality is high in patients with metastases with survival ranging between 5-24 months. Immunohistochemical stains may aid in differentiating porocarcinomas from other skin malignancies. Wide local excision (WLE) has been the most common modality of treatment. However, Mohs micrographic surgery (MMS) is now emerging as a more effective treatment to reduce recurrence.



## 75) DYSAUTONOMIA PRESENTING AS PROFOUND ORTHOSTATIC HYPOTENSION IN A PATIENT WITH AL AMYLOIDOSIS AND MULTIPLE MYELOMA RECEIVING BORTEZOMIB

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**INTRODUCTION:** Dysautonomia is a general pattern of autonomic nervous system (ANS) dysfunction that impacts involuntary bodily processes. Aberrant functioning of the sympathetic and parasympathetic branches of the ANS are typically involved, with symptoms that can present focally or in a generalized pattern. One finding may include orthostatic hypotension, defined as reduction of systolic blood pressure of at least 20 mmHg or of diastolic blood pressure of at least 10 mmHg, usually within the first three minutes of standing. The many possible etiologies of dysautonomia can pose a diagnostic challenge and make this condition difficult to treat.

**CASE PRESENTATION:** A 73-year-old male with multiple myeloma (MM) and AL amyloidosis, complicated by nephrotic syndrome and end stage renal disease requiring peritoneal dialysis was admitted for multiple episodes of syncope and falls. He had started cycle 4 of a chemotherapy regimen including bortezomib 5 days prior to admission and experienced multiple episodes of diarrhea in the days following treatment. Notably, he had been evaluated in the emergency department the month prior for syncope in the setting of viral gastroenteritis after receiving chemotherapy as well.

On presentation to the emergency department the patient was mildly hypotensive. His remaining vital signs were within normal limits. Head imaging was negative for acute intracranial pathology and laboratory evaluation was largely unremarkable. He was given 2 liters of IV normal saline given concern for hypovolemia in the setting of acute diarrhea and admitted to the hospital for further workup and fluid resuscitation.

On admission, the patient was found to meet criteria for orthostatic hypotension due to a systolic blood pressure decrease from 100 mmHg to 80 mmHg. Despite the significant drop in blood pressure, he did not have an expected increase in heart rate. The patient did not report any lightheadedness or syncope when obtaining orthostatic vitals. He remained orthostatic following aggressive fluid resuscitation over subsequent days. He additionally had intermittent, asymptomatic sinus bradycardia with rare episodes of non-sustained ventricular tachycardia. Cardiac workup, including a stress test and echocardiogram, was unremarkable. Neurology was consulted and felt that the persistent orthostasis was due to autonomic dysfunction which was likely multifactorial due to his underlying amyloidosis, MM, and bortezomib, which carries autonomic dysfunction as a rare side effect. The episode of syncope prior to admission was thought to be due to orthostatic hypotension which worsened by post-treatment diarrhea. After initial non-pharmacologic measures failed, he ultimately started midodrine which improved his orthostatic vitals and discontinued bortezomib.

**DISCUSSION:** This case highlights the complexity of dysautonomia and the possible etiologies, all of which need to be addressed to most optimally treat a patient. It also demonstrates a rare side effect of bortezomib, a drug used to treat amyloidosis and various hematologic malignancies, though the precise mechanism of action has not yet been clarified. Recognition of this side effect and considering other contributing etiologies is essential to effectively adjusting chemotherapy regimens to minimize morbidity.

## 76) WHEN TREATMENT BECOMES A PAIN IN THE NECK

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**Introduction:** Aseptic meningitis is a syndrome of meningeal inflammation not caused by pyogenic bacteria. As a result, CSF gram stain and bacterial cultures are negative. Aseptic meningitis usually has a relatively benign, self-limiting course but in cases can be life-threatening. There is an extremely wide differential for aseptic meningitis, including both infectious and non-infectious causes. The most common causes are viral, but mycobacterial, fungal, and spirochetal infections, as well as drugs, malignancies and systemic diseases are other etiologies. Here, we present a case of aseptic meningitis of unusual etiology.

**Case:** A 56-year-old woman with a past medical history of hypertension, hyperlipidemia, and idiopathic polyneuropathy, presented to the emergency department with high-grade fevers, headache, neck pain and stiffness, and photophobia hours after her fourth intravenous immunoglobulin (IVIG) infusion. The patient had started IVIG infusions two weeks prior, for treatment of her polyneuropathy. After her second IVIG infusion eight days prior, she had developed similar but less severe symptoms, which had subsided a day later. On current presentation, patient was febrile to 102.6° F and tachycardic. Labs were grossly unremarkable, including no leukocytosis or lactic acidosis. CT head and chest x-ray were unremarkable. Patient was started on empiric vancomycin, ceftriaxone, and acyclovir and a lumbar puncture was performed. Cerebrospinal fluid (CSF) cell count showed a WBC count of 359 with 51% lymphocytes, 42% neutrophils. Protein and glucose CSF levels were normal and meningitis/encephalitis panel was negative. A diagnosis of aseptic meningitis secondary to IVIG was therefore made and antibiotics were discontinued. Patient had significant clinical improvement with resolution of symptoms and was discharged home within 48 hours. The proposed pathophysiology of IVIG-induced aseptic meningitis involves a hypersensitivity reaction or release of inflammatory cytokines due to IgG and vessel antigen interactions.

**Discussion:** Drug-induced aseptic meningitis (DIAM) is an uncommon adverse reaction to medications. DIAM as a complication of IVIG is a rare occurrence. Some documentations in the literature identify non-steroidal anti-inflammatory drugs (NSAIDs) as the most common cause of DIAM and there have also been documented cases with trimethoprim/sulfamethoxazole. An analysis of the French pharmacovigilance database by Bihan et al identified IVIG, NSAIDs, vaccines and antimicrobials as some of the main reported classes of drugs associated with aseptic meningitis. Risk factors include a history of migraines and higher doses of IVIG (1- 2 g/kg), although it can occur at any dose. Aseptic meningitis after IVIG infusion usually manifests as a delayed reaction, typically after 6 but within 48 hours of infusion.

Symptoms usually improve within 48 hours of cessation of the treatment with supportive management. However, DIAM is a diagnosis of exclusion and typical presenting symptoms such as headache and fever are non-specific. CSF analysis is therefore important in ruling out other etiologies such as bacterial meningitis.

This case serves as an important reminder of the value of patient education regarding possible adverse reactions of IVIG infusions, as well as having a high index of suspicion for less commonly recognized complications like aseptic meningitis. This would facilitate prompt discontinuation of the treatment.

## 77) ATRIAL FIBRILLATION AND HYPERTENSION COMMUNITY SCREENING AND EDUCATION WITH WORD OF HOPE MINISTRIES

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Atrial fibrillation (AF) and hypertension (HTN) are common cardiac conditions with significant consequences, affecting millions of adults worldwide. Despite a higher prevalence of AF risk factors, African Americans are reported to exhibit a lower prevalence of AF. Potential explanations for this AF paradox include differential impact of AF risk factors according to ethnicity and AF under-detection, due to African Americans having less access to health care and underrepresentation in medical research. Therefore, large-scale AF and HTN screening in asymptomatic African American adults can enhance our understanding of disease prevalence, identify contributing lifestyle factors, and enable education and early intervention. In a novel collaboration with the Word of Hope Ministries, we regularly provide community-based cardiovascular screenings, to investigate the prevalence of AF and HTN in an urban African American population.

Screening is performed at the church and includes a rhythm strip recording using Kardia Mobile (AliveCor Inc., San Francisco, CA, USA) EKG monitors and standard blood pressure measurements. Study participation includes 4 visits over the course of one year, at which electrocardiograms, blood pressure, and weight are measured. Additionally at visit 1 and 4, cardiovascular screening questionnaires covering cardiovascular disease knowledge, history, and a validated nutritional survey are completed. Participants receive biometric data and personalized nutritional summaries and recommendations. Subjects with hypertension are additionally provided with automated blood pressure cuffs and use instruction.

Thus far 30 participants (10 males, 20 females) have enrolled, with an average age of 61 years (SE, 1.9). To date, 18 participants completed their second visit, 8 completed their third visit, and 1 completed the one-year follow-up. History of HTN was reported by 53%, diabetes mellitus by 23%, and hyperlipidemia by 47%. 53% reported public health insurance, 43% private and 3% uninsured. 86% reported having a primary care provider. During the first visit, average weight was 212.33 pounds (SD, 6.87), BMI was 34.46 (SD 6.9), heart rate was 73 bpm (SD 14), systolic blood pressure was 135.2 mmHg (SD 22.88), and diastolic blood pressure was 83.3 mmHg (SD 13.5). Comparing the first and last visits, mean weight increased by +6.42 pounds (SD 14.9), BMI increased by +1.05 (SD 2.3), heart rate increased by +0.16 bpm (SD 11.5), systolic blood pressure decreased by -4.5mmHg (SD 14.5), and diastolic blood pressure slightly increased by +0.11mmHg (SD 10.2). According to the nutrition questionnaire, 70% of participants reported excessive fat consumption, 60% consumed too much sodium, and 40% did not consume enough fruits and vegetables. All participants recognized the role of exercise in lowering the risk of heart attack and stroke, with 60% engaging in at least 30 minutes of exercise once a week.

Our initial findings highlight the prevalence of hypertension in this cohort and the likely contribution of lifestyle factors, particularly diet and sedentary lifestyle. Screening results may help guide targeted educational strategies in the community setting with the goal of modifying cardiovascular disease risk. Moreover, our protocol demonstrates the feasibility of community engagement to establish trust and partnership with minority populations, ultimately increasing their representation in medical research.

## 78) MARANTIC ENDOCARDITIS: AN UNUSUAL PRESENTATION OF MULTIFOCAL EMBOLI IN A YOUNG ADULT

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**Introduction:** Marantic endocarditis, also known as nonbacterial thrombotic endocarditis (NBTE), is a rare form of endocarditis that results from deposition of thrombus and fibrinous material on heart valves. It commonly occurs in hypercoagulable states due to malignancies or thrombophilia.

**Case Presentation:** 30 year old patient with complex medical history including chromosomal abnormality, Toriello-Carey syndrome, Lennox-Gasault seizure disorder, and longstanding hereditary thrombophilia due to PAI-1 4G homozygous gene mutation on enoxaparin presented to an outside hospital due to priapism attributed to trazodone and underwent cavernosal shunt placement. Perioperative course was complicated by altered mental status, fever, and bilateral MCA and cerebellar embolic infarcts, and embolism to both lower extremities. Due to fever of unknown origin, infectious work-up was started and TEE was obtained showing vegetations on the aortic valve and mitral valve. Patient started on ceftriaxone and vancomycin and a heparin drip. Differential included subacute endocarditis and marantic endocarditis with patient's history of thrombophilia. Throughout patient's stay, blood cultures remained negative. They were discharged to a long-term care hospital on vancomycin and heparin given on-going concern of endocarditis but antibiotics were eventually discontinued and they were placed back on enoxaparin. After one month, he re-presented to our hospital with AKI and recurrent fevers. Infectious work-up was repeated due to concern for bacterial endocarditis with cultures, fungal, AFB, Nocardia, and 16S, all of which were negative. TEE was obtained and showed resolution of the vegetations. Imaging showed multifocal DVT through IVC and iliac vessels, retroperitoneal and iliopsoas complex cystic lesions, complex splenic lesion, and multiple small liver masses, concerning for malignancy. Further testing was done with anti-cardiolipin antibodies, beta-2-glycoprotein antibodies, JAK-2 testing, and PNH flow, which were negative. MRI showed Hepatic adenomatosis and liver biopsy confirmed this finding. Kidney biopsies demonstrated findings of acute tubular necrosis, thrombotic microangiopathy, and focal segmental glomerulosclerosis. Work-up for malignancy and cause of NBTE were negative and no cause for patient's thrombotic state was uncovered. Overall, patient demonstrated stabilization and was discharged back to long-term care hospital while on anticoagulation. His NBTE was thought to be secondary to his underlying hypercoagulable condition and interruptions in his anticoagulation.

**Discussion:** Marantic endocarditis is a cause of systemic embolism that requires appropriate infectious work-up to rule out infectious endocarditis. Additionally, when considering marantic endocarditis as a diagnosis, it is important to rule out malignancy and evaluate for hypercoagulable conditions as a cause of NBTE.

## 79) CLINICAL OUTCOMES AND COMPLICATIONS ASSOCIATED WITH PRO-DENSE SYNTHETIC BONE VOID FILLER UTILIZED FOR THE TREATMENT OF BENIGN BONE TUMORS

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**Background:** Benign primary bone tumors are often treated with intralesional curettage and reconstruction of the defect with cement or bone graft material. Synthetic bone graft substitutes such as Pro-Dense have become increasingly popular for this indication. Pro-Dense (Wright Medical Technology, Arlington, TN) is a biodegradable osteoconductive and osteoinductive synthetic matrix of calcium sulfate, calcium phosphate, and tricalcium phosphate. However, there is limited data regarding the long-term postoperative outcomes of Pro-Dense as a treatment method for benign bone tumors. The purpose of this study is to improve the understanding of the radiographic incorporation of Pro-Dense into bone, as well as to understand its complications and reliability for the treatment of benign bone lesions.

**Methods:** This was a retrospective review of 59 patients who underwent aspiration and injection or open curettage with placement of Pro-Dense as the sole bone void filler in the treatment of benign bone lesions. Outcomes that were measured in this study included time for radiographic Pro-Dense incorporation into bone, postoperative complications, and local recurrence rate.

**Results:** The median time for incorporation of Pro-Dense into bone was 7 months with complete incorporation occurring in 84.7% of the patients. Failure of Pro-Dense incorporation was more prevalent for lesions residing adjacent to the joint space with the potential for contact with synovial fluid (25% vs. 1.9% for lesions in contact with joint space vs. not in contact). For the 9 patients with incomplete remodeling, radiographic indication of abnormal remodeling was first observed at 3-4 months. Complications with Pro-dense were infrequent, occurring in 6.8% of patients, with infection and fracture rates of 5.1% and 1.7% respectively. 12.5% of patients with intra-articular lesions experienced these complications, compared to 5.9% for non-articular lesions.

**Conclusion:** Pro-Dense is a viable bone graft substitute for the reconstruction of cavitory bone defects and demonstrates excellent functional outcomes with low complication rates when treating primary benign bone lesions. Caution should be taken when treating lesions that have intra-articular communication. Further research is needed to determine the interactions between Pro-Dense and synovial fluid.

## 80) UNDERSTANDING BARRIERS TO COMPLETING ADVANCE CARE PLANNING WITHIN THE HISPANIC POPULATION AT THE WAUSAU FREE CLINIC

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**Introduction:** Advance care planning (ACP) is the process of having important conversations before preparing the advance directive legal document. An Advanced Care Plan is the document that informs a healthcare provider what treatment one would prefer if they are unable to make these decisions for themselves. Approximately one in three adults in the United States has completed any type of advance directive for end-of-life care. Minority populations have even lower rates of advance directive completion. Specifically, individuals who identify as Hispanic are less than half as likely as non-Hispanic White participants to have an advance directive documented in their medical record. The significantly smaller completion rates of advance directives by the Hispanic population led to a needs assessment on ACP at the Wausau Free Clinic (WFC), where the patient population is over 74% Hispanic and nearly 80% minority populations. Volunteer healthcare providers at the WFC administered a survey to guide future education on ACP.

**Methods:** An initial literature review determined possible barriers within the Hispanic population to completing ACP. A ten question needs assessment was created to include basic demographics questions, the respondent's general knowledge of ACP and health care power of attorney, previous conversations about ACP with physicians, desires to learn more about ACP, preferred method of information delivery, and barriers to completing ACP. Surveys were administered in English or Spanish to willing participants 18 or older from February 2023 until May 2023 one half day per week after vitals were taken. Data was analyzed qualitatively for common themes and quantitatively for percentages and means.

**Results:** About three-fourths of the 46 respondents were Hispanic or Latino. Most respondents were middle aged, but the population also included younger and older adults. Over 80% of respondents had not heard of ACP, but 61% desired to learn about it. Although 70% said that they have someone in the US to make healthcare decisions for them, only 17% have a legal document designating that individual. Only 1 in 10 participants said that a physician has had a conversation with them about ACP. Respondents prefer 1:1 learning, followed by small group then large group learning. Healthcare access and lack of education were the biggest challenges to participating in ACP. Fear, cultural beliefs, and spiritual beliefs were other common challenges.

**Conclusion:** Most individuals who utilize WFC were unaware of ACP. This could be due, in part, to the lack of education provided by physicians to this population. Because Wisconsin is not a next of kin state, family members are not authorized to make decisions for adult family members if they are unable to do so for themselves. This increases the importance of having an advance directive completed for all individuals 18 years or older. Addressing the identified barriers to ACP during patient visits will clarify of an individual's desires and may support increased ACP completion.

## 81) IT'S NOT SCIATICA: NEW DIAGNOSIS OF MULTIPLE MYELOMA WITH SACRAL PLASMACYTOMA IN A 23-YEAR-OLD FEMALE

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**INTRODUCTION:** Plasmacytoma is a rare plasma cell tumor and is considered an intermediate between monoclonal gammopathy of undetermined significance and multiple myeloma (MM). Plasmacytoma can exist solitarily, progress to MM, or exist concomitantly with MM. MM is rare in young patients, with even fewer patients having concomitant plasmacytoma. We present a 23-year-old female who presented with low back pain, left leg weakness, constipation, and urinary retention found to have a large sacral plasmacytoma and newly diagnosed multiple myeloma.

**CASE DESCRIPTION:** A 23-year-old female with a one-year history of intermittent back pain who presented to an outside hospital with acutely worsened low back pain, and new onset left leg weakness, constipation, and urinary retention. She did not have health insurance and was unable to seek proper medical care. She had been told her pain was possibly from inflammation of her sciatic nerve. MRI of the lumbar spine done at the outside hospital demonstrated an expansile sacral mass. She was then transferred to a tertiary care center for additional work-up and treatment.

Upon arrival, she reported severe lower back pain, constipation, and urinary retention. Physical exam revealed saddle anesthesia and numbness/weakness of the left lower extremity. She was placed on a hydromorphone patient-controlled analgesia pump. Pain control remained difficult during her admission, necessitating involvement of the pain management team. Other pain medications included tizanidine, oxycodone, ketorolac, acetaminophen, gabapentin, baclofen, methocarbamol, lidocaine patches, and diclofenac gel. Neurosurgery was consulted and recommended CT-guided biopsy of the sacral mass and conservative management. CT scan redemonstrated the sacral mass compressing the spinal canal and neural foramina. MRI brain, T-spine, and C-spine were negative for metastatic disease. Lab work was significant for pseudohyponatremia in the setting of hyperproteinemia with elevated free kappa, kappa: lambda ratio, and serum IgG. CT-guided biopsy of the sacral mass demonstrated sacral plasmacytoma. Bone marrow biopsy demonstrated multiple myeloma. She was taken for emergent external-beam radiation treatment by radiation oncology and initiated on IV steroids by hematology/oncology. She went on to complete a 12-day inpatient radiation therapy course prior to discharge, with planned outpatient follow-up for systemic therapy (DARA-VRd) followed by autologous stem cell transplantation.

**DISCUSSION:** The incidence of plasmacytoma in newly diagnosed multiple myeloma is relatively rare, with occurrence between 3.5-18%. Additionally, multiple myeloma is very rare in young patients, with diagnosis before 40 years of age representing <2% of all patients. Symptoms of MM and plasmacytoma include bone pain, fatigue, weight loss, constipation, and nausea. High-dose chemotherapy plus autologous stem-cell transplantation (ASCT) is still considered the standard of care. Although extremely rare in this age demographic, this case demonstrates the importance of keeping multiple myeloma on the differential in young patients with severe bone pain and neurologic symptoms without clear etiology. Delay in a thorough workup can lead to complications such as pathological fractures, renal failure, and cauda equina syndrome. Indications for imaging in adults with low back pain include severe or progressive neurologic deficits and signs of cauda equina syndrome (urinary retention/incontinence, fecal incontinence, saddle anesthesia, and significant motor deficits).

## 82) A CASE OF AUTOIMMUNE HEMOLYTIC ANEMIA TRIGGERED BY ENDOMETRIAL CANCER

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**Case:** A Korean 55-year-old female with a history of leiomyoma and kidney stones presented to the emergency department with abdominal pain. Further work up also showed new onset anemia. A pelvic exam demonstrated a large distended fibroid protruding into the vagina. Pelvic MRI noted a large multilobulated complex mass, consistent with a uterus replaced by multiple fibroids, measuring to be approximately 15 x 10 x 10.8 cm. This mass had been previously identified and measured seven and 1 year prior at, 13.5 x 9.7 x 10.0 cm, and 9.8 x 9.7 x 5.3 cm. The anterior of the mass displayed calcifications compatible with a degenerating uterine fibroid, 7 cm in diameter, while the posterior aspect was more lobulated and pushed on the left external iliac vein and ureter. The margins of the lobulated components were well-defined. A biopsy was performed, revealing endometrioid carcinoma with genetic testing negative for BRCA1/BRCA2. The patient's CA15-3 was high at 460 U/mL and CA-125 was within normal limits. A positive Direct Coombs Test (DAT) with warm autoantibodies was noted. Peripheral blood smear revealed Spherocytic Hemolytic Anemia alongside basophilic stippling, giant platelets, polychromasia, poikilocytosis and stomatocytes. CBC and Diff showed Hgb of 4.2g/dL and platelets of 604 10e3/uL with a reticulocyte count of 4.1%. A total hysterectomy, tumor debulking, and omentectomy were performed. A Prednisone taper was prescribed to the patient, starting with 50mg. The patient was also started on Paclitaxel 309mg and Carboplate Dextrose 5% 250mL chemotherapy. Repeat CT scans in the following months displayed residual irregular soft tissue nodularity measuring 5.5 x 3.0 cm along the pelvic sidewall, indicating incomplete disease eradication, but no new metastatic disease.

**Discussion:** Autoimmune hemolytic anemia (AIHA) is characterized by autoantibodies directed against host red blood cells. Previous studies have shown AIHA being predominantly associated with hematological, autoimmune, and infectious pathologies. The specific underlying cause of AIHA still remains a mystery. This patient presents with a rare case of AIHA following a uterine neoplasm diagnosis. Common symptoms of AIHA can include hepatosplenomegaly and fever. Our patient presented with neither yet had two small low-density lesions in the liver indicating that common clinical findings are not always reliable in identifying AIHA. General treatment of AIHA includes a regimen of glucocorticoids with splenectomy, depending on severity. For cases of AIHA induced by ovarian neoplasms, tumor removal is integral in effective treatment. However, in our patient tumor removal, total hysterectomy, omentectomy and glucocorticoid treatment proved only temporarily effective; Hemoglobin levels and reticulocyte count normalized, yet cessation of prednisone caused hemoglobin levels to decline once again. This is one of the first reported cases of endometrial carcinoma triggering AIHA.

**Conclusion:** Clinicians should maintain weariness for non-classical manifestations of AIHA, especially within the context of East-Asian populations and uterine neoplasms. This case report highlights a varying cause of AIHA and highlights the difficulties associated with diagnosis for even the most experienced clinicians.



### 83) ASSESSING THE IMPACT OF A CLINICAL CONTINUITY TRACK (CCT) PROGRAM FOR PATIENTS WITH CHRONIC CONDITIONS AT A STUDENT-LED FREE CLINIC

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**Background:** The Clinical Continuity Track (CCT) at the Saturday Clinic for the Uninsured (SCU) is a specialized program that aims to provide individualized, patient-centered care to those diagnosed with chronic conditions. The program matches a student doctor with an individual patient to act as an advocate and provide continuity; the patient sees this student doctor for routine follow-up visits and monthly check-ins between appointments. The CCT program distinguishes itself from the typical workings of SCU, where patients are seen by a different care team at every appointment. Very little research has been done assessing the impact of longitudinal members of a healthcare team on patient care and wellbeing, especially in the context of a student-led free clinic for uninsured patients.

**Problem Statement:** This project aims to assess the impact of the CCT program on patients with chronic conditions. We hypothesize that patients enrolled in the CCT program would have improved health outcomes and satisfaction due to its patient-centric and longitudinal nature.

**Methods:** We identified nationally accepted standards of care for managing and monitoring the following chronic conditions: diabetes, hypertension, hyperlipidemia, chronic kidney disease, and coronary artery disease. A retrospective chart review of CCT patients was performed; health data was collected pre- and post-enrollment. As an example, for patients with diabetes we examined frequency of testing and values for HbA1c, lipid panel, and urine microalbumin, referrals for a dilated eye exam, and blood pressure screenings. This data will be analyzed to assess whether patients received care that meets national standards and whether there was a change in target outcomes pre- and post-enrollment. A patient satisfaction survey was also created and will be conducted to assess the patient experience.

**Expected Results:** We anticipate that enrolling patients with chronic conditions into the CCT program will yield chronic disease monitoring that is more consistent with national standards and improved target outcomes. We also anticipate that patients will be more satisfied with their clinic experience.

**Conclusion:** We expect the results of this study will inform changes to clinic procedures and the CCT program to improve patient care. Other student-led free clinics can apply key takeaways from the analysis of our CCT program to their own clinics.

## 84) DEVELOPMENT OF LINEAR IGA BULLOUS DERMATOSIS FOLLOWING VANCOMYCIN DESENSITIZATION

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Linear IgA bullous dermatosis (LABD) is an acquired autoimmune blistering disorder characterized by the linear deposition of IgA at the dermal-epidermal junction. Intravenous vancomycin is the most reported trigger of medication-induced LABD.

We present a case of a 60-year-old female developing LABD following a vancomycin desensitization protocol for treatment of osteomyelitis. The MRSA strain isolated from her blood was susceptible to ciprofloxacin, daptomycin, doxycycline, trimethoprim/sulfamethoxazole, and vancomycin, all of which had previously triggered adverse reactions, including non-bullous skin eruptions and concerns for airway edema. Given the risk of myelosuppression with long-term use of linezolid and limited alternative options, the patient underwent vancomycin desensitization using a dose-escalation protocol. On the tenth day, she reported swallowing difficulty and developed facial flushing, extremity erythema and edema approximately four hours after the conclusion of the most recent vancomycin infusion. Over the next few days, she developed small vesicles progressing to large, tense bullae across her extremities and torso. Dermatology was consulted for evaluation. Histopathological examination and direct immunofluorescence of biopsies obtained from the bullae edge revealed findings consistent with LABD. Given her clinical course, vancomycin was felt to be the most likely trigger and was discontinued. Antibiotic treatment of her bacteremia was continued with intravenous linezolid. Management of her LABD included 2 g/kg of intravenous immunoglobulin (IVIG) divided over four days, 60 mg prednisone for five days, and topical triamcinolone and oral dexamethasone and nystatin rinse. She completed a four-week steroid taper with local wound cares with gradual resolution of her bullae and skin erosions.

As vancomycin is a commonly used anti-microbial agent in the inpatient setting, it is important to understand the diagnosis and management of adverse reactions that may arise. Vancomycin is associated with vancomycin infusion reaction (VIR), IgE-mediated anaphylaxis, and linear IgA bullous dermatosis (LABD). Patients with a known history of VIR and/or IgE-mediated anaphylaxis may benefit from vancomycin desensitization protocols. However, the pathogenesis of vancomycin-induced LABD involves production of IgA autoantibodies. LABD does not share common pathways of mast cell degranulation with VIR and anaphylaxis, and its risk of occurrence cannot be attenuated by further exposure to vancomycin. Vancomycin use should be avoided entirely in any patients with history concerning for vancomycin-induced bullous reactions, while desensitization protocol may be appropriate for patients with history of mast cell mediated reactions only. The use of vancomycin in patients with a known history of adverse reaction to vancomycin should prompt a thorough investigation of the previous reaction type and severity to guide appropriate clinical management. This case highlights the key differences in the pathomechanisms of vancomycin-induced adverse reactions and their implications on clinical management.



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