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2024 Abstracts

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Clinical Oral Vignettes

B12 DEFICIENCY MASQUERADING AS TTP! A CASE REPORT

Asem Abu-Jamea, MD; Ateeq Rehman, MD, FACP; Liz Thaliath, MD
Marshfield Clinic, Marshfield, WI

Introduction: Idiopathic thrombotic thrombocytopenic purpura (TTP) is a rare hematologic emergency characterized by the development of autoantibodies against ADAMTS13. TTP typically presents with a combination of microangiopathic hemolytic anemia (MAHA), thrombocytopenia, neurological manifestations, kidney damage, and fever. Cobalamin plays a vital role in DNA synthesis, normal red blood cell formation, and neurological health. Individuals deficient in vitamin B12 may exhibit symptoms resembling TTP, including MAHA, low platelet count, elevated indirect bilirubin levels, and schistocytes. Differentiating between these conditions can present both diagnostic and therapeutic difficulties.

Case: 50-year-old female with no known chronic illnesses presented with a 2-week history of epigastric pain, generalized fatigue, lightheadedness, and dizziness. Blood work showed low hemoglobin 5.2 g/dl, high MCV 116.4 fL, platelets 165 x10^3/uL, elevated total bilirubin of 1.6 mg/dL, low haptoglobin <10 mg/dL, LDH >4000 Unit/L, and corrected reticulocytes index 1.1. The blood smear showed anisopoikilocytosis, schistocytes, and polychromatophilia. She received 2 units of PRBCs, improving her hemoglobin to 8.1 g/dl, but it dropped to 6.9 g/dl the next day, requiring another unit. Platelets dropped to 74 x10^3/uL. As the picture mimicked TTP with anemia, thrombocytopenia, schistocytes on peripheral smear, plasmapheresis was initiated. Further work-up however revealed a low vitamin B12 level <150 pg/mL, ADAMTS13 level was normal at 61%, high MMA 0.66 umol/L, and elevated homocysteine 47.4 umol/L. Initiation of Intravenous B12 supplementation resolved the anemia and thrombocytopenia. Intrinsic factor antibody was positive, confirming pernicious anemia. At follow-up, her hemoglobin was 11.3 g/dl, platelets 635 x10^3/uL, and LDH 423 Unit/L.

Conclusion: Vitamin B12 deficiency-induced pseudothrombotic microangiopathy shares clinical features with TTP and is often misdiagnosed as TTP, leading to unnecessary treatment. In contrast to typical MAHA/TTP, vitamin B12-related pseudo-TTP presents as macrocytic, megaloblastic anemia with reticulocytopenia, elevated levels of homocysteine and methylmalonic acid, low vitamin B12 levels, and high levels of lactate dehydrogenase (LDH) exceeding 2500 IU/L. While TTP requires urgent plasmapheresis, vitamin B12 deficiency is managed with B12 supplementation. Therefore, distinguishing between these two conditions is crucial due to their differing treatment approaches.

ACUTE GENERALIZED EXANTHEMATOUS PUSTULOSIS: A RARE AND SERIOUS ADVERSE EFFECT OF COMMON MEDICATIONS

Blake T. Brown, DO; Biana Leybishkis, MD
Aurora Health Care Internal Medicine Residency Program, Milwaukee, WI

Introduction: Acute Generalized Exanthematous Pustulosis (AGEP) is a rare, and often severe, cutaneous adverse reaction usually associated with medication administration. The most common medications implicated are antibiotics. AGEP is characterized by a rapid eruption of sterile pustules and eventual desquamation, fever, and leukocytosis.

Case Description: A 65 year old male presented to the hospital with lethargy and hypotension after being found down at home. He was diagnosed with sepsis secondary to severe intertrigo of his pannus and cellulitis of his lower extremity associated with infected lower extremity wounds. He was started on broad spectrum antibiotics with cefepime, metronidazole, and vancomycin as well as topical ketoconazole. He initially responded well to treatment. On day six of admission, he began to develop worsening erythema of his trunk and by day seven, diffuse innumerable pustules had formed on his trunk, arms, legs and face. Labs were notable for significantly elevated WBC with neutrophil predominance, despite one week of broad spectrum antibiotics. Due to concern for antibiotic reaction, antibiotics were discontinued. However, he developed recurrent hypotension secondary to the inflammatory response and he was transferred to the ICU for brief vasopressor support and stress-dosed steroids. He was also started on full-body topical triamcinolone 0.1% cream TID. The pustular reaction began to improve and four days after starting topical steroids, he began full body desquamation revealing healthy skin beneath. Topical steroids were continued until erythema resolved and desquamation was complete.

Discussion: This case is a typical presentation of a very rare adverse reaction to medications that are commonly prescribed both in the outpatient and inpatient setting. If AGEP is not quickly recognized, the offending agent withheld, and treatment initiated this condition can be fatal. It is important for providers to be able to recognize this rare adverse reaction.

A CASE OF SEVERE OSTEOARTHRITIS OF THE HIP AFTER OSTEOARTICULAR TUBERCULOSIS

Alex M. Lasinski, BS[1]; Kathryn A. Miller, MD[2,3]

[1] School of Medicine and Public Health, University of Wisconsin-Madison, Madison, WI

[2] UW Health Knee and Hip Comprehensive Non-Surgical Osteoarthritis Management Clinic, Madison, WI

[3] Department of Medicine, University of Wisconsin-Madison, Madison, WI

Introduction: Osteoarticular tuberculosis (OA TB) occurs in 1-3% of patients with tuberculosis (TB) and 15% of OA TB cases occur in the hip. Diagnosis is often complicated by atypical clinical presentation. Management includes resection arthroplasty, arthrodesis, or total joint arthroplasty, however surgery is not always possible. Without treatment, OA TB can result in progressive joint destruction, chronic pain, and arthritis.

Case Presentation: A 47-year-old female from Mexico with a medical history of systemic lupus erythematosus and chronic steroid use was evaluated for chronic right hip pain. MRI revealed extensive right hip synovitis with complex joint effusion. Arthrocentesis demonstrated bloody synovial fluid with negative cultures. After a positive QuantiFERON®-TB Gold Plus blood test, repeat arthrocentesis revealed granulomatous inflammation of the synovium and an acid-fast bacilli culture grew TB. Despite six months of antitubercular therapy, she was unable to undergo joint replacement due to lack of insurance. She was then lost to follow-up. Ten years later, she presented to an osteoarthritis management clinic with worsening right hip pain. She had significant difficulty walking 10 meters and required a cane for assistance. With a BMI of 42, she was not a candidate for total hip replacement. After 18 months of nonoperative management and weight loss, she revisited orthopedic surgery and underwent a total joint replacement. She did well post-operatively.

Discussion: This case of OA TB describes a rare, yet serious cause of chronic hip pain. It highlights how care is negatively impacted for patients who are uninsured or underinsured. Body mass index is a common reason for surgical ineligibility; patients with severe osteoarthritis-related pain struggle with weight loss due to pain that limits daily activities and exercise. Ongoing care from a medical team, as well as social support, are necessary for these patients to achieve the weight loss necessary for surgical eligibility.

PULMONARY LIGHT CHAIN DEPOSITION DISEASE IN A 29-YEAR-OLD NON-SMOKING FEMALE

Robert Marker, DO; Zeeshan Tariq; Aniruddh Kapoor, MD
Aurora Health Care Internal Medicine Residency Program, Milwaukee, WI

Background: Pulmonary light chain deposition disease (PLCDD) is a rare type of monoclonal immunoglobulin deposition disease. It is strongly related to plasma cell dyscrasias such as amyloidosis and multiple myeloma. PLCDD involves linear deposition of immunoglobulin light chains in the lung which manifest as nodules and cystic structures. The presentation of this disorder varies widely and ranges from being asymptomatic to rapid progression to respiratory failure. The diagnosis of this condition relies on biopsy characteristics. The most commonly utilized criteria involve a negative Congo Red stain. We present a case of confirmed PLCDD on immunohistochemical staining with positive Congo Red stain.

Case Presentation: Our patient is a 29-year-old female who presented with acute cough, fatigue and myalgias. She was found to be influenza A positive, and a chest x-ray demonstrated nodular opacities of unknown etiology. A computed tomography scan revealed innumerable nodules along with some cystic structures. Video assisted thorascopic surgery was performed and nodule biopsies revealed an acellular amphophilic to eosinophilic material with peripheral ossification and giant cell response. Congo Red staining was positive on two separate cell blocks. Subsequent amyloid subtyping with immunohistochemical staining was negative for amyloid deposits and showed features consistent with kappa light chain deposition disease.

Discussion: PLCDD is an exceedingly rare disorder with only roughly 60 documented cases since it was first described in the 1980's. It has a wide range of presentations ranging from being asymptomatic despite disease progression to rapid progression to respiratory failure. In the current literature, the primary defining feature that separates primary amyloidosis from PLCDD is that PLCDD has a negative Congo Red stain. In this report we describe the novel case of a patient with nodulocystic findings on lung imaging with multiple specimens positive for apple-green birefringence on Congo Red staining but negative results on all subsequent amyloid subtyping tests.

ADULT-ONSET STILL'S DISEASE COMPLICATED BY MACROPHAGE ACTIVATION SYNDROME

Zahraa Qamhieh, MBBS, PMSc; Dalia Sriwi, MBBS; Sean O'Neill, MD, FACP
Department of Internal Medicine, University of Wisconsin Hospital, Madison, WI

Introduction: Adult-onset Still's disease (AOSD) is a rare inflammatory disorder, typically seen in young adults, characterized by recurrent fever, rash, arthralgias, and other systemic manifestations. Its etiology involves genetic susceptibility, infectious triggers, and cytokine storm. Diagnosis is by exclusion, aided with the Yamaguchi criteria. One potential complication is Macrophage Activation Syndrome, occurring in 1.7% of patients, often triggered by infection or treatment changes. This case presents AOSD with MAS/HLH likely triggered by infection.

Case Presentation: A 20-year-old healthy female presented with a week-long history of fevers, sore throat, migratory polyarthralgia, and ankle swelling after exposure to a sick roommate. She was tachycardic (120) with otherwise stable vitals. Labs revealed WBC 23.8, predominantly neutrophils, ALT 69, AST 83, and CRP 32.9. CT neck reported pharyngitis but throat culture was negative. TTE was negative for valvular disease or carditis. Symptoms improved with intravenous antibiotics and NSAIDs for presumed post-infectious immune activation; however, she re-presented with diffuse skin papules and worsening peripheral swelling. Lab tests showed persistent leukocytosis with new anemia (HG 8.8) and high ferritin (5K). Consultations with rheumatology, ID, and dermatology led to extensive workup, notable for positive DNAse B. She was started on penicillin for rheumatic fever; however, symptoms persisted with rising ferritin levels (62k) and a positive interleukin 2 receptor. Bone marrow biopsy was normal. Eventually, Rheumatology favored a diagnosis of AOSD, based on the 1992 Yamaguchi criteria, complicated by MAS. She was started on Dexamethasone and Anakinra with near resolution in symptoms.

Discussion: Timely diagnosis of AOSD is challenging owing to its diverse manifestations and the absence of serologic markers, increasing risk of complications like permanent joint damage, DIC and pulmonary hemorrhage. Early collaboration among specialties is crucial. While there are no universal guidelines for treatment, steroids, DMARDs, and IL-1 inhibitors have emerged as common approaches.

(MENTAL STATUS) GOES DOWN, DOWN, DOWN IN A BURNING RING OF FIRE

Jake Thomas, DO; Kelsey Lamb, MD; Amit Taneja, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Toxoplasmosis represents the clinical disease of infection with the intracellular protozoan Toxoplasma gondii. Infection primarily occurs via two methods; the first through ingestion of oocysts typically in food contaminated with cat feces, and the second through consumption of undercooked meat contaminated within cysts. Infection primarily remains asymptomatic in immunocompetent hosts, however, immunocompromised populations may experience reactivation of latent cysts. This has classically been described in the HIV/AIDS population, however allogeneic hematologic stem cell transplantation (HSCT) represents another group susceptible to infection. Here we describe a case of CNS toxoplasmosis in a patient who underwent allogeneic HSCT.

Clinical course: The patient is a 64 yo male with acute myeloid leukemia status post allogenic HSCT presenting with fever and elevated creatinine 30 days post-transplant. He was started on cefepime and metronidazole while a large infectious workup was started. Four days after admission he became acutely altered. A computed tomography (CT) scan of his head was negative for acute intracranial abnormalities. CNS studies drawn through an Oomyra revealed elevated protein and nucleated cells. A brain MRI later revealed multiple ring-enhancing lesions. Serologic testing of blood and CNS revealed positive IgG and IgM toxoplasma antibodies. He was started on high-dose trimethoprim-sulfamethoxazole and was later transitioned to pyrimethamine, clindamycin, and leucovorin due to hyperkalemia. His altered mental status gradually improved with antibiotics. PCR toxoplasma via blood sample was negative prior to discharge and he was discharged on the pyrimethamine, clindamycin, and leucovorin with a transition to trimethoprim-sulfamethoxazole in the outpatient setting.

Discussion: Our case highlights a unique case of CNS Toxoplasmosis in an HSCT recipient. Roughly 11% of immunocompetent individuals have serologic evidence of toxoplasmosis infection. Many toxoplasmosis cases are the result of reactivation of latent infection. The incidence of toxoplasmosis in allogenic HSCT recipients ranges from 0.1%-6%, with incidence varying by region. However, the mortality rate attributed to these infections is between 60%-90% with the majority of cases being diagnosed post-mortem. Due to its high mortality and the possibility of being under-recognized, clinicians need to keep toxoplasmosis encephalitis on their differential when considering altered mental status who underwent allogenic hematopoietic stem cell transplant.

Research Oral Vignettes

INCIDENCE OF MAJOR HEMORRHAGE IN PCI PATIENTS ON DAPT: A RETROSPECTIVE ANALYSIS OF BLEEDING EVENTS BASED ON BLEEDING RISK

Zoey Good, DO; Susan Franki, MS; Michael Witcik, MD
Department of Medicine, Gundersen Health System, La Crosse, WI

Background: Balancing ischemic and bleeding risks when prescribing dual antiplatelet therapy (DAPT) after percutaneous coronary intervention (PCI) has always been a significant challenge in cardiology. It is essential to maintain the integrity of the stent while minimizing the incidence of major bleeding. Current guidelines recommend a minimum of 12-months of DAPT after stent placement. However, recent evidence suggests that extending DAPT duration does not provide additional benefits, regardless of ischemic risk, and may, in fact, be more harmful to patients. This study aims to evaluate Gundersen patients on DAPT, focusing on the incidence of major bleeding and their associated bleeding risk.

Methods: This was an Institution Review Board approved, retrospective study of adult patients from a rural health center who underwent PCI with drug-eluting stent (DES) placement, followed by at least 1 month of DAPT, defined as aspirin and a P2Y12 inhibitor, from 2013 to 2023. Data were collected on the duration of DAPT and the incidence of significant bleeding events requiring hospitalization, based on the Bleeding Academic Research Consortium (BARC) definitions, with major bleeding classified as BARC type 3 or 5. Patients were also categorized into high or average bleeding risk groups according to the Academic Research Consortium for High Bleeding Risk (ARC-HBR) criteria, where high bleeding risk was defined as meeting one major criterion or two minor criteria. All data analyses were performed using the statistical software R with a p-value <0.05 considered significant.

Results: A total of 948 eligible patients were included in the study, of whom 54 (5.7%) experienced a major bleeding event following PCI. Among these patients, 32 (59%) were classified as high bleeding risk, while 22 (41%) were classified as average bleeding risk. These findings reveal a significant association between high bleeding risk and the occurrence of bleeding events after PCI ($p < 0.01$). Preliminary data suggests that a longer duration of DAPT may be associated with patients who experienced bleeding events.

Conclusion: This research suggests that patients with a high bleeding risk may achieve better outcomes if treated with DAPT for 1 month followed by P2Y12 inhibitor monotherapy for 12 months, aligning with current study findings.

"IS IT THERE OF IS IT NOT?" A QUALITATIVE STUDY OF ALLERGISTS' PERSPECTIVES OF PRECAUTIONARY ALLERGEN LABELS

Mahera Husain, MD[1], Shaan N. Somani, MD[1,2]; Barry Pelz, MD[1]; Ruchi S. Gupta, MD[2]

[1] Medical College of Wisconsin, Milwaukee, WI

[2] Center for Food Allergy and Asthma Research, Northwestern University Feinberg School of Medicine, Chicago, IL

Rationale: Precautionary allergen labels (PAL) are voluntary and unregulated labels placed on manufactured food products to indicate a potential risk of unintended allergen presence. We aimed to determine how allergists in the United States counsel patients on PAL interpretation and whether they would support the incorporation of reference doses (or "thresholds") into PAL.

Methods: Semi-structured interviews were conducted with 32 practicing allergists at the 2024 annual AAAAI conference. Interviews were audio recorded with participants' consent and transcribed verbatim. Initial coding was conducted by the three lead authors using an inductive approach. A preliminary codebook was developed, which was iteratively refined until a final codebook consisting of 57 codes was achieved via consensus. Thematic analysis was employed to identify and report patterns within the data.

Results: Participants reported wide variation in how they counsel food allergic patients to interpret PAL. Though many advise strict avoidance of all products with PAL, the majority tailor their advice based on a combination of patient-specific and food-specific factors. Though many feel that PAL help prevent accidental ingestions, most participants expressed that PAL cause significant confusion, dietary restriction, and anxiety among food allergic patients. Allergists were broadly supportive of incorporating reference doses in PAL, though several concerns were brought up regarding the safety and feasibility of this change.

Conclusions: 83% of surveyed allergists were supportive of incorporating thresholds into PAL to allow for tailored recommendations based on individual level of risk. This policy change warrants further exploration pending input from food-allergic consumers.

UTILIZATION OF POINT-OF-CARE ULTRASOUND (POCUS) IN THE EMERGENCY DEPARTMENT: A SYSTEMATIC REVIEW AND META-ANALYSIS

Apurva Popat, MD; Sweta Yadav, MD; Ateeq Rehman, MD, FACP
Marshfield Clinic, Marshfield, WI

Introduction: Point-of-care ultrasound (POCUS) is an imaging modality that has become a fundamental part of clinical care provided in the emergency department (ED). The applications of this tool in the ED have ranged from resuscitation, diagnosis, and therapeutic to procedure guidance. This review aims to summarize the evidence on the use of POCUS for diagnosis and procedure guidance.

Methods: To achieve this, CrossRef, PubMed, Cochrane Library, Web of Science, and Google Scholar databases were extensively searched for studies published between January 2000 and November 2023. Additionally, the risk of bias assessment was performed using the Quality Assessment of Diagnostic Accuracy Studies 2 (for studies on the diagnostic role of POCUS) and Cochrane Risk of Bias tool (for studies on the use of POCUS for procedure guidance). Furthermore, diagnostic accuracy outcomes were pooled using STATA 16 software (StatCorp., College Station, TX, USA), while outcomes related to procedure guidance were pooled using the Review Manager software.

Results: The study included 81 articles (74 evaluating the diagnostic application of POCUS and seven evaluating the use of POCUS in guiding clinical procedures). In our findings, sensitivities and specificities for various conditions were as follows: appendicitis, 65% and 89%; hydronephrosis, 82% and 74%; small bowel obstruction, 93% and 82%; cholecystitis, 75% and 96%; retinal detachment, 94% and 91%; abscess, 95% and 85%; foreign bodies, 67% and 97%; clavicle fractures, 93% and 94%; distal forearm fractures, 97% and 94%; metacarpal fractures, 94% and 92%; skull fractures, 91% and 97%; and pleural effusion, 91% and 97%. A subgroup analysis of data from 11 studies also showed that the two-point POCUS has a sensitivity and specificity of 89% and 96%, while the three-point POCUS is 87% sensitive and 92% specific in the diagnosis of deep vein thrombosis. In addition, the analyses showed that ultrasound guidance significantly increases the overall success rate of peripheral venous access ($p = 0.02$) and significantly reduces the number of skin punctures ($p = 0.01$) compared to conventional methods.

Conclusion: In conclusion, POCUS can be used in the ED to diagnose a wide range of clinical conditions accurately. Furthermore, it can be used to guide peripheral venous access and central venous catheter insertion.

Keywords: pocus efficiency studies, emergency medical technology, ultrasound in clinical care, pocus diagnostic accuracy, clinical procedure assistance, emergency department diagnostics, radiological imaging techniques, procedure guidance ultrasound, diagnostic ultrasound applications, pocus in emergency medicine

ATRIAL FIBRILLATION AND HYPERTENSION COMMUNITY SCREENING IN URBAN AFRICAN-AMERICAN POPULATION: A COLLABORATIVE STUDY WITH WORD OF HOPE MINISTRIES

Oscar Villarreal Espinosa; Marcie Berger, MD, FACC; Stacey Gardiner, MD
Medical College of Wisconsin, Milwaukee, WI

Atrial fibrillation (AF) and hypertension (HTN) are significant global health issues, impacting millions worldwide. Despite the higher prevalence of HTN and related risk factors among African Americans, AF is reported less frequently in this population, potentially due to under-detection linked to limited healthcare access and underrepresentation in research. This study aims to explore the prevalence of AF and HTN in an urban African American community through large-scale, community-based cardiovascular screenings, enhancing understanding and enabling early intervention.

In collaboration with Word of Hope Ministries, we conducted screenings using Kardia Mobile EKG monitors for rhythm strips and standard blood pressure (BP) measurements. Participants attended four visits over a year, where electrocardiograms, BP, and weight were recorded. Additionally, they completed questionnaires assessing disease knowledge, medical history, and nutrition at the first and last visits. Personalized nutritional summaries and automated BP cuffs were provided to hypertensive individuals.

As of the latest update, 47 participants (17 males, 30 females) with an average age of 60.5 years (SD 14) have enrolled. The ethnic distribution included 46 African Americans and 1 Caucasian. Of these, 28 completed their second visit, 15 their third, and 1 completed the one-year follow-up. Key findings include a high prevalence of HTN (53%) and hyperlipidemia (47%), with 23% reporting diabetes mellitus. Insurance coverage showed 53% public, 43% private, and 3% uninsured, while 86% had a primary care provider.

Initial visit measurements revealed an average weight of 209.69 pounds (SD 37.86), BMI of 33.38 (SD 6.67), heart rate (HR) of 73 bpm (SD 14), systolic BP of 131.23 mmHg (SD 21.4), and diastolic BP of 80.55 mmHg (SD 13.68). A-Fib was detected in 6.6% of participants, all of whom were receiving treatment. Comparative data from the initial and subsequent visits indicated that 19 participants had a systolic BP of 132 mmHg, with 12 showing a reduction by an average of 4 mmHg over time.

Nutrition assessments highlighted excessive fat consumption in 70% of participants, high sodium intake in 60%, and low intake of fruits and vegetables in 40%. A notable improvement in recruitment and retention rates was observed following the introduction of monetary incentives in November 2023, with new and established participants increasing from an average of 3 and 2 to 4 and 5 per visit, respectively.

These findings emphasize the significant prevalence of HTN and related risk factors in this cohort, underscoring the critical role of diet and lifestyle. Our community engagement protocol demonstrates the feasibility of building trust and partnerships with minority populations, thereby enhancing their representation in medical research. Screening outcomes provide valuable insights that can guide targeted educational strategies to mitigate cardiovascular disease risk in community settings.

Future directions include expanding the participant base to 100 individuals, evaluating long-term results, and potentially replicating the methodology in other underrepresented communities. This initiative highlights the importance of community-based health interventions in improving healthcare accessibility and outcomes for at-risk populations.

COMPARATIVE EVALUATION OF VARIOUS ARTIFICIALLY INTELLIGENT CHATBOTS FOR MANAGEMENT OF COMMON INTERNAL MEDICINE CONDITIONS

Daniel Willcockson MD, MPH
Department of Internal Medicine, University of Wisconsin Hospital, Madison, WI

Introduction: The integration of artificial intelligence (AI) in healthcare, particularly within internal medicine, holds the potential to significantly enhance diagnostic accuracy, patient management, and clinical workflows. Advanced AI tools such as ChatGPT-4o, Gemini Pro, and Perplexity Pro are capable of interpreting clinical data, generating differential diagnoses, and automating various administrative tasks. These advancements can streamline medical procedures and personalize treatment plans.

Methods: This study aimed to compare the accuracy and reliability of ChatGPT-4o, Gemini Pro, and Perplexity Pro in responding to internal medicine-related medical management questions, including those related to acute coronary syndrome, type 2 diabetes mellitus, acute kidney injury, and others. Each chatbot's response was independently reviewed by itself and each other using an answer key derived from current literature on UpToDate. Responses were rated on a 10-point Likert scale, with 10 indicating the highest accuracy. The overall statistical significance was assessed using the Friedman test, while pairwise comparisons between chatbots were conducted using the Mann-Whitney U test.

Results: The analysis showed no significant difference in the chatbots' abilities to answer medical management questions accurately and reliably when using the Friedman test ($P = 0.06 – 0.72$). Despite the lack of statistical significance, ChatGPT-4o and Perplexity Pro repeatedly achieved higher Likert scores compared to Gemini Pro. Pairwise comparisons, however, revealed significant differences between ChatGPT-4o and Gemini Pro ($P < 0.01$) and between Gemini Pro and Perplexity Pro ($P < 0.01$) but no difference between ChatGPT-4o and Perplexity Pro ($P = 0.48$).

Discussion: AI chatbots like ChatGPT-4o, Gemini Pro, and Perplexity Pro demonstrate substantial potential in enhancing internal medicine practices. While the Friedman test showed no significant difference ($P = 0.06 – 0.72$), pairwise comparisons revealed that ChatGPT-4o and Perplexity Pro were superior in answering internal medicine-related medical questions compared to Gemini Pro ($P < 0.01$). The comparable performance among these chatbots underscores the necessity for continued development and evaluation to ensure their effectiveness in clinical settings. Future studies should focus on refining these AI tools and exploring their integration into clinical practice, such as answering patient portal messages.

Of note, AI was used in the development of this abstract.

Resident Posters

1) A CASE OF HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS TRIGGERED BY ADULT-ONSET STILL'S DISEASE

Marina Adrianzen, MD; Aurora Pop-Vicas, MD, MPH
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Hemophagocytic Lymphohistiocytosis (HLH) is a rare, life-threatening, systemic inflammatory condition caused by a dysregulated activation of cytotoxic T-cells and macrophages. HLH can be familial, caused by mutations in genes controlling cytotoxic T-cell and natural killer cells, or acquired, triggered by an infection, malignancy, or autoimmune disease. We present a case of HLH as a complication of adult-onset Still's disease.

Case: A 20-year-old female presented with a month-long history of intermittent fevers, chills, pharyngitis, a resolving salmon-colored facial rash, nausea, anorexia, and migratory arthralgias. On admission, she had fever (39.3°C), tachycardia (111 bpm), cervical lymphadenitis, diffuse joint tenderness, and swollen ankles. Lab findings included leukocytosis (30.4 K/μL), anemia (Hb 8.1 g/dL), elevated LDH (1,297 μ/L), high LFTs (AST 165 U/L, ALT 69 U/L), elevated total protein (8.9 g/dL), and low albumin (2.2 g/dL). A thorough workup for infection and malignancy was negative. Adult-Onset Still's Disease was diagnosed based on the presence of ≥ 5 Yamaguchi Criteria (major: fever, arthritis, leukocytosis; minor: recent sore throat, lymphadenitis, elevated LFTs, negative antinuclear antibody and rheumatoid factor).

Additional notable labs included elevated ferritin (75,316 ng/mL), IL-2 (1,799.2 pg/mL), and triglycerides (266). Although her bone marrow biopsy was normal, further workup revealed a markedly elevated CXCL9 (> 46,000 pg/mL) - a chemokine induced by activating the interferon-gamma pathway and a specific marker of disease activity in HLH. Thus, given a predisposing condition (rheumatological), her clinical manifestation, and the presence of 5 required criteria (fever > 38.5°C, cytopenia, hypertriglyceridemia, ferritin >500, elevated CXCL9), the patient was diagnosed with HLH. She was initially treated with dexamethasone and anakinra (an IL-1 inhibitor). However, subsequent genetic testing for autoimmune disease was positive for a DRB1*15:01 allele mutation that confers an increased risk of interstitial lung disease during treatment with IL-1 inhibitors. Anakinra was then replaced with baricitinib - a Janus kinase (JAK) inhibitor, which has recently been reported effective as an alternative treatment for HLH complicating Still's disease. The patient showed significant clinical improvement and was discharged in stable condition.

Discussion: HLH diagnosis is challenging, given its clinical variability and lack of specificity for inflammatory markers such as ESR, CRP, IL-2, and ferritin, which can be generally elevated in acute illness. The extensive workups needed to uncover a recent infectious disease trigger, an underlying malignancy, or a concomitant rheumatological disease can lead to diagnostic delays. The more specific CXCL9 or immunologic testing requires specialized reference laboratories. Although the presence of hemophagocytosis is highly correlated with HLH, this is often a late manifestation of disease. Because HLH can rapidly progress to multi-organ failure and is fatal without treatment, a high index of suspicion and prompt therapy in consultation with hematology specialists are imperative for a successful outcome. Since our patient presented early in the course of disease and was clinically stable, she had a good initial response to the treatment of her underlying Still's disease that triggered HLH. In the future, she will require close monitoring and longitudinal follow-up by her multi-disciplinary care team.

2) SUCCESSFUL WIDEFIELD MULTIFOCAL BAND LIGATION-ASSISTED ENDOSCOPIC MUCOSAL RESECTION OF ESOPHAGEAL EPIDERMOID METAPLASIA

Mazen Almasry, MBBS; Eric Vecchio, MD; Deepak Gopal, MD, FRCP (C)
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Esophageal epidermoid metaplasia (EEM), also known as esophageal leukoplakia, is an uncommon premalignant condition documented primarily in case reports and small series. EEM has been linked to esophageal squamous cell carcinoma, GERD, Barrett's esophagus, lichen planus, and esophageal adenocarcinoma. We report a case of EEM managed with endoscopic mucosal resection (EMR) using the band ligation-assisted technique.

Case Description: A 64-year-old woman with a history of esophageal body aperistalsis, remote history of esophageal strictures requiring dilations, and gastroesophageal reflux on omeprazole presented for surveillance endoscopy given her known history of Barrett's esophagus. EGD showed dilation in the esophagus with stasis changes as well as localized, yellow plaques in the middle third of the esophagus for which biopsies were taken. Pathology showed esophageal squamous mucosa with epidermoid metaplasia, edema, and intraepithelial lymphocytosis. The patient was referred for endoscopic for mucosal resection. Demarcation of the lesion was performed to identify the boundaries of the lesion with narrow-band imaging (Figure 1, A). She underwent endoscopic mucosal resection (EMR) using the band ligation-assisted technique (Figure 1, B) with a widefield multifocal overlapping mucosectomy at 3 adjacent nodular sites in the mid-esophagus . The margins were carefully inspected for residual tissue, and none was present (Figure 1, C). Pathology confirmed epidermoid metaplasia with associated active esophagitis, but no dysplasia or carcinoma was noted. Repeated surveillance endoscopy is planned in three months with possible treatment with radiofrequency ablation.

Discussion: The endoscopic appearance of EEM can vary, including presentations such as white plaques, keratotic patches, granularity, nodularity, furrows, and a lacy pattern. In contrast, pathological features are more definitive, with diagnosis confirmed by the presence of hyperkeratosis and a prominent granular cell layer. For focal lesions of EEM, EMR using the band ligation-assisted technique should be considered. Larger, diffuse lesions with dysplasia may be treated with endoscopic ablation therapies like radiofrequency ablation. Given the association of EEM with esophageal cancer, these lesions should be treated endoscopically and follow up rigorous monitoring through endoscopic surveillance is essential.

3) BREAKING THE STIGMA: INTEGRATING DEBRIEFING SESSIONS INTO MEDICAL EDUCATION

Heather Burton, MD; Chana Bushee, MD; Jared Squires, MD
Medical College of Wisconsin Program, Milwaukee, WI

Introduction: Distressing / adverse events are experienced by most medical students and residents. Previous studies show that despite the high prevalence, utilization of support services remains limited, primarily due to time constraints and the stigma associated with seeking help. Debriefing following adverse events offers healthcare professionals a platform to share healthy coping strategies, manage grief, and maintain professional integrity while improving resilience, increasing career satisfaction, and reducing the risk of burnout. Despite these benefits, less than half of the adverse events experienced by medical students are followed by a debrief.

Methods: We designed a debriefing curriculum for third-year medical students (MS3s) and collaborated with the Internal Medicine (IM) clerkship administrative team to integrate it into the MS3 IM core-clerkship. During the 2023-2024 academic year, we led six 1-hour debriefing workshops for each group of students at the halfway point through their IM clerkship. The workshops included a large group teaching session followed by small group discussions and practice. We constructed pre- and post-workshop surveys to assess MS3 experiences with debriefing throughout their third-year clerkships and general debrief knowledge prior to and following the workshop.

Results: Over the course of the academic year, as well as during their IM clerkships, 80% of MS3s experienced one or more adverse events, yet the majority of these were not followed by a debrief (70%). Prior to the workshops, most students agreed that debriefs are important (89%); however, few felt comfortable leading or even requesting a debrief (14% & 27%, respectively). After the workshops, there was a significant increase in students' ability to identify when a debrief was needed (54% to 87%) and students felt more comfortable requesting debriefs (27% to 67%) and leading debriefs (14% to 52%). Students also found the workshops helpful for teaching the components of a debrief (63%) and empowering their participation (63%). Most MS3s recommended the session (75%).

Conclusions: The implementation of debriefing workshops successfully increased MS3 comfort and competence in debriefing following distressing events and empowered student participation and leading of debrief sessions. Most students reported positive experiences and recommended the continuation of the program with further integration into the IM core-clerkships.

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4) A CURABLE CAUSE OF DYSPNEA

Marie Callay, MD; Victoria M. Brucker, DO; Vikas S. Koppurapu, MD
Gundersen Health Program, La Crosse, WI

INTRODUCTION: Dyspnea is a common symptom and is reported by up to 25% of patients in general medicine clinics and up to 60% in pulmonary clinics. Spirometry and chest radiography are commonly used diagnostic tests for evaluation of chronic dyspnea. Spirometry primarily classifies pulmonary abnormalities into obstructive or restrictive patterns. Restrictive pattern can be from multiple conditions including pulmonary parenchymal and extraparenchymal abnormalities. Hiatal hernia is a fairly common condition, affecting 15-20% of the population. It is generally not implicated in the causation of dyspnea and restrictive spirometry. We present an unusual case where the patient had complete resolution of dyspnea along with normalization of previously moderately severe restrictive spirometry following surgical repair of hiatal hernia.

DESCRIPTION: Patient is a 68-year-old female, lifetime non smoker with a history of class I obesity, obstructive sleep apnea, and type IV paraesophageal hernia. She was evaluated in pulmonary clinic for a three year history of cough and dyspnea. Spirometry showed a normal FEV1/FVC ratio (83%), reduced FEV1 (66% predicted), and FVC (63% predicted); there was no significant bronchodilator response. DLCO corrected for hemoglobin was normal. Her symptoms were deemed to be secondary to possible asthma and GERD. She had minimal improvement in her symptoms despite medical management with omeprazole and inhalers including albuterol and fluticasone furoate plus vilanterol. She subsequently underwent laparoscopic repair of paraesophageal hernia in May 2023 with Toupet (partial posterior) fundoplication. At follow-up visit in July 2023, patient reported significant improvement in dyspnea, exercise tolerance and quality of life. Her mMRC dyspnea score improved from 3 to 1 following surgical repair. Her follow up spirometry was normal, including normal FEV1 and FVC. Also, her cough eventually resolved, and inhalers were discontinued.

DISCUSSION: Spirometry is commonly used for evaluation of dyspnea. Restrictive pattern on spirometry has broad differential diagnoses. Hiatal hernia is not commonly considered a cause of dyspnea or as a cause of restrictive pattern on spirometry. Our patient had complete resolution of dyspnea following surgical repair of hiatal hernia. Further, her spirometry normalized following the procedure. This case emphasizes the importance of pursuing additional diagnostic evaluation in the setting of failed pharmacotherapy, and consideration of hiatal hernia in the differential diagnoses of dyspnea in such patients, especially when spirometry reveals a restrictive pattern.

IMPORTANCE: While unusual, hiatal hernia can cause significant dyspnea and restrictive pattern on spirometry. Surgical repair can be curative, and pharmacotherapy may be unsuccessful.

5) INCIDENCE OF HEMORRHAGIC STROKE IN HYPERTROPHIC CARDIOMYOPATHY

Jennifer Y. Choi, DO; Julia Hasik, Abhinav Sharma, MD
Medical College of Wisconsin Program, Milwaukee, WI

Background: Individuals with hypertrophic cardiomyopathy (HCM) have an elevated risk of ischemic stroke, primarily driven by the increased risk of atrial fibrillation (AF) development in this patient population. This risk remains elevated regardless of CHADS2VASC score; thus, anticoagulation is recommended for all HCM patients with AF. Given the known association between anticoagulant medications and hemorrhagic events, there is likely an assumed risk of hemorrhagic stroke in these individuals. Currently, the incidence of hemorrhagic stroke in HCM and its relationship to AF and anticoagulation has not been well-established in the literature. The goal of this study was to establish the presence of and risk factors for hemorrhagic stroke in individuals with HCM.

Methods: A retrospective review of all HCM patients ages 18 and older in our institution's health system was performed from 2019-2023. ICD 10 codes were used to identify individuals with hemorrhagic stroke. Patient charts were reviewed for additional data including demographics, comorbid conditions, anticoagulant prescription, and other inciting factors prior to the hemorrhagic event.

Results: The study cohort comprised 343 HCM patients, of which 47.1% were female and 72.7% were Caucasian. Concurrently, 30% (n=103) had a diagnosis of AF. The overall incidence of hemorrhagic stroke was 2.9% (5.8%, n=6 in those with AF vs 1.7%, n=4 in those without AF); furthermore, AF was associated with a non-statistically significant increased risk of hemorrhagic stroke (RR = 3.36, 95% CI 0.97-11.7). Anticoagulant use at the time of hemorrhagic event was observed in 4 individuals (67%) with AF and 1 individual (25%) without AF. Head trauma and falls were frequently observed as precipitating events prior to hospital admission for hemorrhagic stroke, occurring in 83% (n = 5) of patients with AF and 50% (n = 2) of those without AF.

Conclusions: While ischemic stroke and anticoagulant use are commonly studied in those with HCM, the incidence of hemorrhagic stroke in this population is not negligible. Risk of hemorrhagic events in HCM appears largely influenced by anticoagulant use, particularly in those with concurrent AF, and by head trauma. Given the known benefits of anticoagulation on ischemic stroke risk in the HCM population, appropriate counseling and careful attention to individual patient factors may be warranted in the administration of anticoagulants.

6) NON-BACTERIAL THROMBOTIC ENDOCARDITIS IN THE SETTING OF RENAL CELL CARCINOMA

James Dickman, MD; Michael Witcik, MD
Gundersen Health Program, La Crosse, WI

Most endocarditis cases are bacterial in etiology; however, rarely, cardiac valve vegetations can be primarily thrombotic in nature. Sterile vegetations in non-bacterial thrombotic endocarditis (NBTE) patients likely form from a combination of endothelial damage and thrombogenic conditions. The biggest risk factor for developing NBTE is active malignancy especially adenocarcinomas of the lung, colon, pancreas, ovary, and biliary tree. Clinically, NBTE generally presents with thrombo-embolic manifestations (stroke, splenic infarct, etc) rather than with valvular dysfunction manifestation (heart failure, murmur, etc). The suspected reason for this is that thrombotic valve lesions are more fragile and susceptible to dislodging in comparison to lesions of ineffective endocarditis. Here we present a 76 year old man with a PMH of stage IV Renal Cell Carcinoma (RCC) diagnosed 6 months prior with resulting ischemic stroke in the interim who presented to the ED (emergency department) with progressive severe lower extremity edema and generalized fatigue/weakness for 8 days. The admitting team felt that the primary pathophysiology was likely diastolic heart failure given that a TTE from 2 months prior showed normal left ventricular ejection fraction with moderate diastolic dysfunction; the patient was correspondingly started on an IV furosemide regimen. Two days into the hospitalization, because of a lack of clinical improvement, a TTE was obtained that showed normal left ventricular ejection fraction and new mitral regurgitation along with new small vegetations on the mitral valve. One day after that, a TEE confirmed the presence of mitral valve vegetations and demonstrated the presence of aortic valve vegetations as well. Given that the patient was entirely afebrile throughout this hospitalization and that his blood cultures showed no evidence of growth, the vegetations were presumed to be non-bacterial thrombotic endocarditis. To treat, the patient was started on enoxaparin in addition to furosemide. One day after that, his fluid status was felt to be significantly improved and he discharged; given the progression of disease, his regimen of nivolumab was discontinued on discharge. He unfortunately passed away a few weeks after this hospitalization due to progression of his malignancy. NBTE is generally a poor prognostic factor and can be used to help initiate and conduct goals of care discussions. The diagnosis is made when valvular vegetations are seen on imaging with wholly negative cultures (as in this patient). The most common malignancies that NBTE co-occur with are adenocarcinomas; however NBTE should be suspected in any patient with widely metastatic cancer who present with cardio-embolic manifestations or heart failure symptoms to expediate treatment (heparin or enoxaparin; generally avoid warfarin and DOACs) and goals of care discussion. This case illustrates a rare presentation of NBTE with heart failure manifestations rather than definitive cardio-embolism manifestations as well as having a more rare etiology (RCC generally does not cause NBTE).

7) NOT ALL INFLAMMATION IS INFECTION: A CASE OF BISPHOSPHONATE-INDUCED ORBITAL INFLAMMATION

Grace Eisenbiegler, MD; Thomas D. Shiffler, MD, FACP
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Ocular inflammation is a rare but known side effect of bisphosphonates, usually presenting as anterior uveitis, scleritis, episcleritis, or conjunctivitis. The severity can range from mild palpebral edema to severe inflammation with impaired visual acuity. Both intravenous and oral formulations of bisphosphonates are known triggers such ocular inflammation. The prevalence of permanent visual loss in these cases is unknown. Due to similar clinical presentations, these cases are often misdiagnosed as pre-septal or orbital cellulitis, leading to delays in appropriate treatment.

Case presentation: A 60-year-old female with history of type 2 diabetes, osteoporosis, hypertension, iron deficiency anemia, PTSD, MDD, and hypothyroidism presented to the ED with 3 days of right eye pain with extraocular movements, eyelid swelling, and red discoloration of sclera. She had presented to an outside ED 2 days prior and was diagnosed with pre-septal cellulitis and discharged with a course of amoxicillin-clavulanate. The patient had received her first infusion of intravenous zoledronic acid 5 days prior to presentation with 1 day of "flu-like" symptoms after infusion. On examination, she was afebrile with marked edema and erythema of right upper and lower eyelids, as well as significant inferior chemosis, without anterior chamber inflammation, vision was 20/30. CBC with diff and CRP were within normal limits. CT orbit with contrast demonstrated marked inflammation of the right globe, pre-septal soft tissues, and right optic nerve. She was initially treated for presumed orbital cellulitis with broad-spectrum antibiotics. Ophthalmology and oculoplastic surgery were consulted during admission, who diagnosed orbital inflammation secondary to bisphosphonate use given the pertinent clinical history, lack of radiographic or clinical evidence of sinusitis, and worsening pain with extraocular movement despite treatment with antibiotics. She was treated with IV methylprednisolone 1mg/kg daily then increased to1g methylprednisolone daily due to optic nerve involvement. Symptoms improved within 24 hours of the first dose. Six days later, on the day of discharge, the physical exam demonstrated only trace conjunctival injection and normal visual acuity. She was discharged on a prednisone taper starting at 100mg daily, reducing by 20mg per week with eventual complete resolution of symptoms. She will follow up with endocrinology for alternative treatment options for osteoporosis.

Discussion: While infection, namely pre-septal or orbital cellulitis, is the more common cause of unilateral ocular inflammation, bisphosphonate-induced orbital inflammation is important to consider in an appropriate clinical context. This patient's "flu-like illness" shortly after infusion likely represented a prodromal manifestation of inflammation that ultimately led to her ocular manifestations. More broadly, in cases of undifferentiated inflammation, even with focal manifestations, it is essential to consider non-infectious conditions, particularly when there is no clinical improvement after treatment with appropriate antimicrobials. Early consideration of non-infectious etiologies of ocular inflammation, including those secondary to bisphosphonates, with early consultation from ophthalmology is essential to prevent delayed treatment and sequelae from destructive inflammation. While it is often considered more conservative to treat empirically for bacterial infections, it is also essential to consider the harms of delayed treatment of destructive inflammatory pathologies.

8) DE NOVO HEPATOCELLULAR CARCINOMA IN RECURRENT PRIMARY SCLEROSING CHOLANGITIS POST-LIVER TRANSPLANT

Anneleise Frie, MD; Joseph Krenzer, DO; Adnan Said, MD, MS
University of Wisconsin Hospitals and Clinics Program, Madison, WI

INTRODUCTION: While primary sclerosing cholangitis recurrence and development of de novo cancer are not uncommon post-liver transplant (predominantly colorectal cancer and less commonly cholangiocarcinoma), developing de novo hepatocellular carcinoma post-liver transplant is exceedingly rare. We present an exceptional case of recurrent primary sclerosis cholangitis and de novo hepatocellular carcinoma 29 years post-orthotopic liver transplant.

CASE DESCRIPTION: A 42-year old Caucasian male with ulcerative colitis in the United States received an orthotopic liver transplant in 1994 for primary sclerosing cholangitis. His post-transplant course was complicated by hepatic artery thrombosis, so he received a second orthotopic liver transplant in 1995. He developed mucinous colorectal adenocarcinoma post-transplant and underwent curative total colectomy in 1998. While admitted for diarrhea due to newly diagnosed Crohn's Disease in 2021 abdominal computerized tomography showed evidence of recurrent primary sclerosing cholangitis. While hospitalized for viral pneumonia and abdominal pain nearly 29 years post-transplant in 2024, abdominal computerized tomography revealed cirrhotic liver morphology and a new hepatic mass. Magnetic resonance imaging confirmed a 7cm bulky mass in the right hepatic lobe with multiple satellite lesions and associated non-occlusive right anterior portal vein thrombi. Histopathology from biopsies of the mass characterized moderately differentiated hepatocellular carcinoma with a predominant pseudoacinar pattern. The patient was diagnosed with stage IIIA hepatocellular carcinoma, discussed at multidisciplinary tumor conference, and Y-90 radio ablative segmentectomy with possible adjunctive chemotherapy treatments are planned.

DISCUSSION: In patients undergoing liver transplant for hepatocellular carcinoma, screening for recurrent cancer has been shown to have significant mortality benefit and most cases of liver cancer occur within five years post-transplant. Development of de novo hepatocellular carcinoma after liver transplant is rare, but as transplant longevity increases post-liver transplant, screening for recurrent liver disease (PSC, cirrhosis) and malignancy are important considerations. This case exemplifies how such screenings could be beneficial and the importance of using high-quality imaging and histopathology for accurate diagnosis and treatment guidance.

9) SCRATCHED BY A CAT, A RARE CAUSE OF BARTONELLA HENSELAE SPONDYLODISCITIS

Jesse Galuk, MD; Jairo Eraso, MD
Aurora Health Care Program, Milwaukee, WI

Background: Bartonella henselae is a fastidious, gram-negative bacterium that causes Cat Scratch Disease (CSD). Rarely, vertebral spondylodiscitis and osteomyelitis (VSO) can occur because Bartonella henselae has a predilection for the vertebral column and pelvic girdle. This should be considered in patients with persistent fever, spinal pain, and lymphadenopathy who are unresponsive to routine VSO therapy. Aminoglycosides and rifampin are both effective and bactericidal treatments.

Case Description: A 40-year-old male presented with acute low back pain and fever. Lumbar magnetic resonance imaging (MRI) showed L2-L3 osteomyelitis with spondylodiscitis, epidural phlegmon, and paraspinal psoas fluid collections. L2 biopsy surgical pathology revealed discitis. Fungal tissue culture grew Candida parasiplosis but Ribosomal DNA 16S Bacteria test had not resulted. Initial antibiotics included Cefepime, Vancomycin, and Micafungin. A Karius test was ordered and was positive for Bartonella henselae DNA. Additional history revealed the patient was scratched and bitten by multiple cats around his residence. Antibiotics were switched to Doxycycline, Rifampin, and Fluconazole. TEE was obtained and showed no cardiac valve vegetations. Bartonella henselae IgM was found to be elevated. The patient ultimately left against medical advice after only 4 days of appropriate IV therapy. He was given an oral antibiotic prescription with Infectious Disease follow up.

Discussion: Back pain is a common clinical complaint. When combined with fever and pain worsening at night, back pain may be the initial manifestation of serious infectious or oncological pathologies. MRI is the most sensitive radiographic technique to define bone lesion characteristics, but discriminating between VSO and neoplasm can be difficult, therefore biopsy of the lesion is recommended. Blood cultures have low sensitivity, tissue cultures are commonly negative and take 2-6 weeks to result, and Polymerase Chain Reaction (PCR) assay is ineffective especially in the absence of bacteremia. Clinicians should be mindful of a bias of antibody prevalence in the general population. Tissue PCR allows the direct and specific detection of Bartonella's genome. A gold standard test for diagnosing CSD has not been established, but having both serology and biopsied tissue PCR results can lead to a more accurate diagnosis.

10) RIME TIME, UNMASKING AN UNCOMMON POST-VIRAL REACTION.

Mariana Garcia-Arango, MD; Divya Vundamati, MD; Thomas D. Shiffler, MD, FACP

University of Wisconsin Hospitals and Clinics Program, Madison, WI

Background: Reactive Infectious Mucocutaneous Eruption (RIME) refers to a broad category of severe mucocutaneous eruptions (it has been described in the literature as atypical SJS, Fuchs syndrome, and M. pneumoniae-associated mucositis). The main clinical distinction is predominantly mucositis following a bacterial or viral infection without exposure to specific medications. Previous case series have found a strong association between RIME and Mycoplasma pneumoniae infections.

Case: A 43-year-old male with PMH of polymyositis on prednisone presented with a 2-day history of conjunctival injection, throat pain, and generalized rash. The rash began on his face, scalp, mouth, and gradually spread cephalocaudal with predominantly significant perioral mucosal involvement and mouth ulcers. Additionally, reported associated nausea, emesis, and dysuria. On admission, he was mildly tachycardic, normotensive, and afebrile. Labs were remarkable for elevated lactate, mild leukocytosis, and elevated inflammatory markers (CRP 6.7 mg/dl and ESR of 20 mm/h). Initial infectious work-up was negative for COVID/RSV. Given severe eruption, SJS/TEN/DRESS were on the differential; dermatology was consulted and recommended high-dose methylprednisolone, etanercept 50mg, and IVIG on admission.

Clinical decision-making: His rash progressed and became maculopapular with some confluent vesicles; a skin biopsy was obtained and demonstrated epidermal necrosis. Throughout the hospitalization, the patient had significant mucosal damage, including mucositis, dysphagia, hematochezia, and abdominal pain from GI sloughing requiring TPN. Notably, there was no exposure to new medications and infectious work-up was positive rhinovirus/enterovirus, negative HSV, and VZV PCR. Given the strong association between mycoplasma and RIME in the literature, serum antibodies were tested and were negative for IgM and positive for IgG. Due to the high suspicion of RIME, he received supportive treatment and a prolonged course of high-dose methylprednisolone, initially 500mg daily, and tapered down slowly. He was discharged home on 30 mg daily of prednisone.

His prolonged hospitalization was complicated by cellulitis, hypovolemia, and superficial dermatophyte infection. Treatment included fluconazole and broad-spectrum antibiotics (vancomycin/cefepime with subsequent de-escalation to ceftriaxone); blood cultures remained negative. Due to severe conjunctivitis and corneal abrasion, ophthalmology was consulted, and amniotic membrane grafts were performed with ocular surface reconstruction. Cyclosporin, moxifloxacin, and prednisolone eye drops were administered. Continuous extensive wound care was provided in our burn unit, and due to severe pain, patient-controlled analgesia was ordered.

Subsequently, the patient was informed of possible exposure to hand, foot, and mouth disease. Serum antibody tests were positive for coxsackie B type 4 and 5. Upon discharge, skin examination was remarkable for significant re-epithelization, with mild denudation and ulceration of oral mucosa and tongue.

Conclusions: This case demonstrates a severe skin eruption from a common virus most likely Rhinovirus or less likely Coxsackie (only one case reported). The diagnosis of RIME requires a high level of suspicion, even though it is more common in children and young patients. Early diagnosis and a multidisciplinary team including advanced wound care are essential for improving patient outcomes.

11) BEHAVIORAL CHANGE IN A MIDDLE-AGED FEMALE LIVING WITH HIV

Francesca Garofalo, MD; Linda Baier Manwell, MS; David Feldstein, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Case: A 55yo female with a history of longstanding HIV/AIDS complicated by latent syphilis, HIV enteropathy, inconsistent adherence to antiretroviral therapy (HAART), and housing insecurity presented to the hospital with altered mental status. She presented after removal from a relative's home. She denied fevers, chills, and neurologic symptoms. On exam she was afebrile, tachycardic, cachectic, and without focal deficits. Mental status exam was notable for disorganized and easily derailed thought process, speech content with confabulation versus delusion, and quick to anger. CD4 count was 84. A comprehensive metabolic panel, urine drug spectroscopy and blood cultures were unrevealing. Lumbar puncture and infectious workup were negative. Head CT and MRI/MRA revealed remote ischemic insult in the right MCA territory. Psychiatry determined that presentation was not consistent with a primary thought disorder. Patient's friends reported cognitive decline for a year. As all infectious and acute neurologic conditions had been ruled out, Neurology and Infectious Disease arrived at a tentative diagnosis of HAND. Patient was continued on prior antiretroviral therapy and discharged to a shelter. Two days later, she was readmitted with altered mental status. EEG, vitamin levels, Lyme titers, serum autoimmune and neoplastic markers were unrevealing. Health care power of attorney was activated. Social Work, the patient's outpatient Infectious Disease provider, and her family were critical in developing a safe discharge plan to live with a relative.

Impact/Discussion: HAND is a neuropsychiatric complication of HIV and prevalence may be as high as 45%. Its development is associated with nadir CD4 count and lower current CD4 count, as in the case of our patient. HAND is a diagnosis of exclusion. Neuropsychological testing finalizes the diagnosis. Patients primarily have concentration and memory challenges, but may progress to poor executive function, apathy, irritable mood, and restlessness.

Interdisciplinary team care (e.g., Ryan White model) has improved outcomes for patients with HIV. This model is crucial for HAND patients; they not only need to adhere to HAART, but also cope with the sequelae of cognitive impairment. The team should include primary care, infectious disease, neurology, psychiatry, pharmacy, neuropsychology, and social work. Goals are to reduce diagnosis barriers, engage caregivers, and encourage HAART adherence. In this case, an interdisciplinary team may have been able to recognize HAND symptoms earlier. Our care team was able to diagnose the patient and develop a safe plan for discharge.

Conclusion:

- HAND is common among people living with HIV and characterized by functional impairment and cognitive difficulties
- The complexities of caring for these patients require an interdisciplinary team to ensure diagnosis, treatment and follow up

12) ELUSIVE FACES OF THE GREAT MASQUERADER - A CASE OF SUSPECTED NEUROSYPHILIS

Jessica Giles, MD; Jonathan Anderson, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Rates of syphilis have increased in the United States making it an important disease to remain on the differential for all clinicians.

Case: A 40 year old male with a past medical history of a suspected transient ischemic attack (TIA) (2023) presents to primary care clinic for annual exam. On further review, a year prior, the patient experienced left facial droop, slurred speech, and left upper and lower extremity weakness lasting for 3 hours. Hospital workup included negative head imaging, negative hypercoagulation profile, mild dyslipidemia (LDL 104), and a small PFO without associated pathological features. Today, further history-taking elucidates the patient has sex with men and has a history of sexually transmitted infections. In 2020, his partner was diagnosed with syphilis, and he believes he was treated prophylactically without formal testing. Physical exam shows a tinea-like rash in bilateral inguinal folds.

Given the history of unexplained TIA, high-risk sexual behavior, and rash, he undergoes testing for syphilis including testing for neurosyphilis with a lumbar puncture. Serologic testing reveals positive treponemal tests (FTA-ABS and TP-PA) and negative RPR. Cerebrospinal fluid (CSF) analysis reveals negative CSF-VDRL and undetectable CSF WBCs. Based on these results, it is determined he does not have active syphilis and does not require further treatment. His rash is treated as tinea cruris and resolves with clotrimazole 1% cream.

Discussion: This case highlights the importance of understanding the neurologic complications of syphilis, the necessity of CSF examination for diagnosis, and a need for sexual history-taking for risk stratification. Treponema pallidum, the bacterium responsible for syphilis, invades the central nervous system in an estimated 30% of individuals within days of initial exposure. As early as secondary syphilis, which occurs within weeks of exposure, neurologic complications such as cranial nerve deficits or acute meningitis may occur. Later, tertiary neurosyphilis manifests as meningovascular disease presenting as cerebral stroke or meningomyelitis, typically 5-12 years post-infection. It may also manifest as parenchymatous disease with tabes dorsalis or chronic progressive memory impairment, personality changes, and emotional lability, typically 15-25 years post-infection.

Persons with syphilis and neurological symptoms should always undergo CSF examination. Our case proves the challenges of making a diagnosis without CSF evaluation. The patient had discordant serological testing: positive treponemal tests and a negative non-treponemal test. Discordant results most commonly occur in patients with a history of successfully treated syphilis, however they can also occur in late syphilis when treponemal tests have become nonreactive. The patient's serologic results ruled out secondary syphilis, meaning his rash was not a result of syphilis, but they could not rule out late syphilis as a cause of the patient's neurologic symptoms. A lumbar puncture with CSF evaluation was necessary with CSF-VDRL, which is specific but not sensitive for neurosyphilis, paired with CSF pleocytosis (>5 WBC/μL), which is sensitive but not specific. Our patient had a negative CSF-VDRL and undetectable WBCs ruling against neurosyphilis. After full diagnostic work-up, we could conclude that the patient did not require additional treatment with IV penicillin.

13) A RARE ENCOUNTER: RIGHT ATRIAL METASTASIS OF UVEAL MELANOMA

Zoey Good, DO; Michael Witcik, MD
Gundersen Health Program, La Crosse, WI

Introduction: Uveal melanoma is the most common intraocular malignancy in adults that predominantly metastasizes to the liver. Cardiac metastasis is exceptionally rare and can present with a wide range of clinical symptoms, from asymptomatic cases to severe conditions such as heart failure or arrhythmia. Cardiac involvement often indicates a poor prognosis, necessitating a multidisciplinary treatment approach.

Case Description: A 76-year-old man with a medical history significant for hyperlipidemia, type 2 diabetes mellitus, atrial flutter, and spinal stenosis sought care at his primary care clinic for left leg weakness and balance difficulties for the past 2 months. The patient had a history of uveal melanoma treated with enucleation 17 years prior and had been under regular follow-up with ophthalmology. Physical examination revealed a prominent left foot drop. The patient had not experienced cardiac symptoms, such as dyspnea on exertion, orthopnea, palpitations, syncope, or lower extremity edema. Magnetic resonance imaging (MRI) with and without contrast of the head found 3 enhancing lesions in the high right frontoparietal region, the 2 largest of which appear hemorrhagic, most compatible with brain metastasis. A PET-CT scan performed to evaluate for additional metastatic disease revealed increased metabolic activity in the right atrium. A transthoracic echocardiogram (TTE) demonstrated a large, hypermobile mass inside the right atrium measuring 4.7 x 3.8 cm, without valvular obstruction. A transesophageal echocardiography (TEE)-guided biopsy confirmed the mass as malignant melanoma upon histological examination. The patient was initiated on immunotherapy with tebentafusp, but repeat TTE images showed no reduction in the size of the mass. Subsequently, the patient underwent cardiothoracic surgery; however, the mass could not be excised due to its infiltration into the free wall of the atrium with nodularity and extension. Ultimately, the patient elected to pursue hospice care.

Discussion: The progression of uveal melanoma can manifest decades after initial treatment. This case highlights the necessity of considering cardiac metastasis in patients with a history of uveal melanoma, especially when presenting with nonspecific symptoms. Although traditionally deemed rare, recent investigations suggest that cardiac metastasis may be underreported or underrecognized in clinical practice. The overall treatment of metastatic heart tumors remains poorly understood. While immunotherapy offers a systemic treatment option, the surgical removal of cardiac masses is still considered the cornerstone of therapeutic approaches. However, increased mortality associated with cardiac tumors is primarily due to the overall tumor burden rather than direct cardiovascular complications. In this case, it remains uncertain how the outcome might have differed if the patient's cardiac tumor had been successfully removed, highlighting the need for further research.

14) ICD IMPLANTATION FOR PRIMARY PREVENTION OF CARDIAC ARREST IN ARRHYTHMOGENIC MITRAL VALVE PROLAPSE

Zoey Good, DO; Michael Witcik, MD
Gundersen Health Program, La Crosse, WI

Introduction: Mitral valve prolapse (MVP) is a prevalent valvular abnormality that, although often benign, can be associated with significant complications such as heart failure, atrial fibrillation, and the increasingly recognized and concerning ventricular arrhythmias. Recent studies have identified a subset of patients with idiopathic ventricular fibrillation (VF) who have a higher prevalence of MVP compared to the general population. Typically, interventions are performed after the initial cardiac arrest and subsequent identification of arrhythmia. This case report highlights a patient with arrhythmogenic MVP who underwent implantable cardioverter-defibrillator (ICD) placement as a primary preventive measure.

Case Description: A 75-year-old male with a history of hyperlipidemia, hypertension, and prostate cancer presented to his primary care provider with worsening exertional dyspnea. A transthoracic echocardiogram revealed a left ventricular ejection fraction (LVEF) of 60-65%, a myxomatous mitral valve with bileaflet prolapse, and moderate regurgitation. A treadmill stress test indicated 10 seconds of polymorphic ventricular tachycardia (VT), although the patient remained asymptomatic during this episode. A 7-day Holter monitor recorded a premature ventricular contraction (PVC) burden of 2.5% and occasional supraventricular tachycardia (SVT). The patient was started on metoprolol tartrate twice daily and provided with a LifeVest until a follow-up with cardiology. Cardiac MRI showed fibrosis of the basal anterolateral and inferolateral segments of the left ventricle, likely secondary to mitral valve regurgitation. A heart catheterization revealed mild cardiac disease, insufficient to explain the VT. The patient was referred to electrophysiology and subsequently had a dual chamber implantable cardioverter-defibrillator (ICD) placed. Mitral valve repair is planned in the upcoming months.

Discussion: This case highlights the intricate relationship between mitral valve prolapse (MVP) and the onset of ventricular arrhythmias, emphasizing the role of implantable cardioverter-defibrillator (ICD) placement in potentially mitigating the risk of sudden cardiac death. The precise pathophysiological mechanism remains largely unknown but is hypothesized to involve the development of fibrotic deposits, creating an arrhythmogenic substrate within the left ventricle due to chronic papillary muscle traction. A distinctive aspect of this patient's MVP was its bileaflet nature. A recent study using a large cohort of patients with unexplained cardiac arrest and MVP revealed a higher prevalence of cases characterized by bileaflet prolapse; however, this association has not been conclusively established in the literature. This case emphasizes the necessity for ongoing research into the pathophysiology of MVP-related ventricular arrhythmias and the optimal timing for ICD placement as a preventive measure prior to cardiac arrest.

15) A VIVACIOUS VORTEX: CARDIAC MRI IMAGING OF A QUADRICUSPID AORTIC VALVE WITH CARDIAC 4D FLOW

Mahera Husain, MD; Aaron A. H. Smith, MD; Scott Cohen, MD
Medical College of Wisconsin Program, Milwaukee, WI

Background: Quadricuspid aortic valves (QAR) are associated with aortic insufficiency (AI). Although echocardiography is the initial modality of choice, there may be limitations due to technical challenges and reduced image quality. Cardiac magnetic resonance (CMR) with 4D-flow can enhance the quantitative assessment of AI and the ascending aorta.

Case Summary: A 77-year-old woman presented with a decade-long history of progressive aortic insufficiency that was diagnosed and monitored with transthoracic echocardiography. Image quality of valve morphology was limited by echocardiography windows, and it was presumed that she had a calcified tricuspid aortic valve. CMR was obtained for quantitative assessment of AI, where a QAV was newly identified. At the level of the aortic valve and left ventricular outflow tract (LVOT), 4D flow assessment demonstrated a maximum flow velocity at 3.9 m/s and moderate regurgitation (41% regurgitant fraction) with a supravalvular whirlpool or vortex diastolic regurgitate flow pattern.

Discussion: Among abnormal congenital aortic valve morphologies, QAVs are very rare with a prevalence 0.013% to 0.043%. as diagnosed with cardiac ultrasound techniques. QAV is most associated with progressive aortic valve regurgitation (as high as 90%). Aortic stenosis and ascending aortic enlargement are less common, though most all will have degrees of aortic valve leaflet thickening. Severity of aortic regurgitation increases with age as characterized by progressive leaflet fibrosis and failure of leaflet coaptation; ultimately requiring surgical aortic valve replacement.

In patients with bicuspid aortic valves, 4D flow analysis has shown that differences in valve morphology correlate with different patterns of aortopathy and aortic stenosis. Further investigation may reveal similar findings in QAVs. Although 4D assessment using cardiac MRI is a relatively new modality, its utilization is expected to increase as new applications of the technique are demonstrated.

In our case, the 4D flow assessment was consistent with other quantification perimeters utilized during the scan as well as prior echocardiograph imaging and allowed for visualization of the complex flow vectors that would not have been seen with 2D imaging.

16) DOUBLE TROUBLE: MYOCARDIAL INFARCTION WITH TAKOTSUBO SYNDROME

Akinwale Iyeku, MD, MS; Matthew Tattersall, DO, MS
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Background: Takotsubo syndrome (TS) is a non-ischemic cardiomyopathy characterized by transient acute regional left ventricular (LV) wall dysfunction in the absence of angiographically significant coronary artery disease or acute plaque rupture. The clinical presentation of TS mirrors that of acute coronary syndrome and is often associated with periods of intense emotional or physical stress.

Case Description: A 67-year-old female with tobacco use disorder and dyslipidemia presented with central chest pain, new anterolateral T wave inversions with prolonged QTc interval, and elevated troponin (peak 9.5 ng/ml) consistent with a non-ST-elevation acute myocardial infarction (NSTEMI). Computerized Tomography of the chest was negative for pulmonary embolism or acute aortic pathology. She was placed on dual antiplatelet therapy (DAPT), low molecular weight heparin and underwent a coronary angiography which revealed severe single-vessel obstructive coronary artery disease (CAD) of the mid left anterior descending artery (LAD), with successful intravascular ultrasound-guided percutaneous coronary intervention (PCI) with a drug-eluting stent. Primary PCI was complicated by the "jailing" of a small diagonal branch. Post-PCI the patient had chest pain, likely attributable to the jailed diagonal branch. Serial worsening of anterolateral T wave inversions and QTc prolongation (Bazett's, peak 505 milliseconds) occurred on electrocardiograms over the subsequent 48 hours, in patterns commonly seen in TS. Echocardiography demonstrated apical circumferential wall motion abnormalities raising the suspicion of an associated stress-induced cardiomyopathy as a complication of her NSTEMI. Cardiac magnetic resonance imaging confirmed a normal LV ejection fraction of 59% with a transmural infarct in the mid to apical anterior segments without apical thrombus. She was discharged on a beta-blocker, statin, ACE inhibitor, and DAPT and outpatient cardiac rehabilitation

Discussion: TS is usually triggered by unexpected emotional or physical stress. The stressful precursor is thought to lead to sympathetic overdrive and catecholamine release which has been hypothesized to lead to microvascular dysfunction. Such sympathetic surges also occur with acute coronary syndromes. Traditionally, TS is diagnosed by the absence of coronary artery disease, and in classic mid-apical TS variants exclusion of proximal LAD disease is vital. Although the clinical presentation, electrocardiographic and biomarker profiles are similar between both conditions, this case shows that myocardial infarction is a stressful event that may trigger TS. Post-PCI electrocardiographic data demonstrating a serial worsening of anterolateral changes with QTc prolongation and imaging demonstrating circumferential apical dysfunction discordant with the distribution of the culprit vessel are key to identifying this sequence. While TS is often an acute and transient cardiomyopathy; its course is not always as benign as previously thought. TS can be associated with significant complications such as LV thrombus, cardiogenic shock, and malignant ventricular arrhythmias.

Conclusion: Patients presenting with myocardial infarction may develop an additional TS as a complication. The presence of apical ballooning or dyskinesia which does not align with the distribution of the diseased coronary artery is key to diagnosing TS in such cases. This is clinically relevant as the development of TS is associated with increased morbidity and mortality.

17) A CASE OF PERNICIOUS ANEMIA PRESENTING AS SEVERE PANCYTOPENIA AND HEMOLYSIS

Tarek Jaber, DO
Medical College of Wisconsin Program, Milwaukee, WI

Our patient is a healthy 18-year-old-male recently immigrated from Mexico who presents to the ED with concern for ongoing epistaxis. He also endorses poor oral intake for the past 1-2 months with associated 10-pound weight loss. He also reports intermittent epistaxis and bleeding gums after brushing his teeth that would take 20 minutes to resolve. He works as a landscaper. He endorses a varied diet daily.

On presentation, his initial vitals were stable. Physical exam with evidence of mild scleral icterus, abdominal tenderness to the epigastric region, and mild generalized jaundice with no ecchymosis or petechia appreciated.

Labs with pancytopenia with white blood cells (wbc) at 2.8, macrocytic anemia with a hemoglobin (hgb) of 2.4, mean corpuscular volume (mcv) of 105, and thrombocytopenia to 36. CMP with ALT elevation to 43, AST to 64, and TBILI at 2.6. Ferritin elevated to 221 with normal iron levels and TIBC at 175. Infectious work-up was non-contributory with HIV, EBV, CMV negative. Hepatitis C was also negative. Folate within normal limits. Normal fibrinogen level. Coagulation labs were also normal. Direct coombs negative. CT chest, abdomen, and pelvis with evidence of cardiomegaly and hepatosplenomegaly. LDH elevated to 4000, haptoglobin <10, and reticulocyte count at .047 – which was concerning for hemolysis. He was given 2 units of packed red blood cells and admitted to the medical ICU for further management. His Vitamin B12 level returned at <150. Hemepath review of the peripheral smear with no evidence of blasts or schistocytes – lowering the concern for acute hematologic malignancies, though there was evidence of ring sideroblasts. TTE was obtained considering previous CT findings of cardiomegaly with additional concern for possible anemia-induced cardiomyopathy. The echo demonstrated severe left ventricle (LV) enlargement and a preserved ejection fraction. Parvovirus antibodies were negative. The rest of his vitamin B levels were normal. Intrinsic factor inhibitor was negative. ESR was normal. His parietal IgG levels returned positive, confirming the suspicion of pernicious anemia. Upper endoscopic evaluation with demonstration of diffuse gastric erythema with loss of gastric folds. Through his hospital stay, the patient was given IM 1000mcg of B12 supplementation daily for 7 days. Patient's B12 levels were 892 on day of discharge. His pancytopenia improved with wbc at 9.8, hgb at 10.5, MCV of 96, and platelet count of 458 on day of discharge. His original symptoms greatly improved, and he was discharged with improved appetite, jaundice, and resolved epistaxis episodes.

This case demonstrated the effects of long-standing B12 deficiency. As seen in this case, through its role in DNA synthesis, we observe both the classic macrocytic anemia and B12 deficiency's role in causing pancytopenia – effecting all hematopoietic cell lines. Also demonstrated here is severe anemia-induced cardiomyopathy. Lastly, B12 deficiency can lead to intra-vascular hemolysis due to RBC membrane deformity as our patient had elevated LDH levels, low haptoglobin, with the absence of schistocytes seen on peripheral smear. Therefore, it is important to remember the long-term effects of pernicious anemia, its presentation, and its role in causing pancytopenia.

18) A RARE CASE OF IMMUNOTHERAPY ASSOCIATED PRIMARY ADRENAL INSUFFICIENCY

Brooke Jennings, MD; Aiman Riaz, MD
Gundersen Health Program, La Crosse, WI

Introduction: Immune checkpoint inhibitor (ICI) therapy has revolutionized the oncology field, and the use of this therapy continues to rise. Unfortunately, ICI therapy has been associated with multiple immune related adverse events (irAEs) resulting in organ damage. One rare, but potentially devastating side effect, is adrenal insufficiency, with incidence rates of approximately 1-2% on single agent ICI therapy. Although rare, the majority of these cases result from secondary adrenal insufficiency. Here we present a rare case of ICI associated primary adrenal insufficiency.

Case Presentation: A 64-year-old male with a history of metastatic lung adenocarcinoma on pembrolizumab for 22 months, hypothyroidism secondary to pembrolizumab, and chronic lymphocytic leukemia presented to his oncologist's office with increasing fatigue. Labs were notable for hyponatremia at 124 mmol/L and hyperkalemia at 5.7 mmol/L. Baseline cortisol level was normal at 12.3 ug/dL. ACTH levels were normal at 17.9 pg/mL. However, given the high degree of clinical suspicion cortisol stimulation test was ordered, which revealed no responsive increase in cortisol levels. When the cortisol stimulation test was done, the baseline cortisol was 13.40 ug/dL, with ACTH simulation, 30-minute cortisol level was 13.77 ug/dL, and 60-minute was 13.61 ug/dL, therefor no increment response to ACTH, hence indicating primary adrenal insufficiency. Patient did have bilateral FDG avid adrenal nodules, however they were stable in size from prior imaging with no adrenal atrophy reported. 21-Hydroxylase antibody testing was negative. He was diagnosed with borderline primary adrenal insufficiency and referred to endocrinology for further management. He was started on hydrocortisone, 20 mg in AM and 10 mg in PM, and fludrocortisone, 0.05 mg daily. He had symptomatic improvement. Approximately 5 days later he presented to the emergency department with altered mental status and fever up to 105. He was admitted for severe sepsis and had clinical improvement over the coming days with antibiotics, fluids, and stress dose steroids. This may explain his original normal baseline cortisol levels, revealing an inadequate stress response level in setting of brewing infection. He had symptomatic improvement with hormone replacement and his electrolytes normalized.

Discussion: Immunotherapy associated adrenal insufficiency is a rare and potentially life-threatening adverse effect. It requires a high degree of clinical suspicion across all specialties that will encounter patients receiving immunotherapy. Patients require prompt initiation of hormone replacement therapy. ICI therapy associated adrenal insufficiency is typically secondary, with one study siting 92.7% of cases being secondary. The exact mechanism of ICI induced primary adrenal insufficiency remains poorly understood, but generally involves autoimmune destruction of the adrenal gland, with various potential autoantibodies that may be implicated in the process. Endocrinology consultation for co-management is an important aspect for comprehensive care in patients with newly diagnosed ICI associated adrenal insufficiency.

19) UNVEILING A RARE COMPLICATION: TRANSVERSE MYELITIS ARISING AFTER OSSEOUS TRANS ARTERIAL CHEMOEMBOLIZATION (TACE) FOR FOLLICULAR THYROID CARCINOMA METASTASES

Brooke Jennings, MD; Aiman Riaz, MD
Gundersen Health Program, La Crosse, WI

Introduction: Follicular thyroid carcinoma, the second most prevalent type of thyroid cancer, encompasses a spectrum from minimally invasive to more aggressive forms, necessitating tailored treatment strategies. For metastatic disease, therapeutic options may include radiotherapy, chemotherapy, or both, following total thyroidectomy. Transarterial chemoembolization (TACE) involves injecting chemotherapy into the feeding arteries of a tumor in combination with particles designed to slow or stop the further arterial supply to the tumor. Here, we present a case of a patient with metastatic follicular thyroid carcinoma who underwent intercostal chemoembolization with the aim of enhancing subsequent radioactive iodine therapy and local disease control, yet experienced a rare and debilitating complication of transverse myelitis.

Case Presentation: A 54-year-old male with metastatic follicular thyroid carcinoma with osseous metastasis, with a remote history of testicular choriocarcinoma and melanoma over 20 years prior, presented for outpatient procedure with interventional radiology for focal area metastatic disease management through chemoembolization of osseous metastasis of iliac wing, left fifth and ninth ribs, and left pubic ramus, to be followed by cryoablation. Prior to this, patient did undergo thyroidectomy and radioactive iodine therapy. During the chemoembolization, a balloon microcatheter was utilized to minimize the potential for retrograde reflux. The diagnostic injection of the left fourth intercostal artery demonstrated the presence of an anterior spinal artery, which was not radiographically evident on initial contrast injection of the T9 intercostal artery. Doxorubicin and mitomycin C were administered in an emulsion with endothelialized oil and Embozine microspheres. Following intercostal chemoembolization, the patient developed acute onset numbness below the umbilicus and motor weakness in bilateral lower extremities. The patient was diagnosed with transverse myelitis, approximately T9 level on left and L1 on right, secondary to chemotherapeutic toxicity exposure. Patient started on IV dexamethasone. Patient had minor improvement of symptoms with this including sensation improvement in right leg and mild strength improvement with adduction. He was discharged to the inpatient rehab team on a prolonged steroid taper. The patient has had gradual clinical improvement over the coming months with steroids and aggressive physical therapy, he now has 3 to 4 out of 5 strength in the lower extremities.

Discussion: To our knowledge, this represents the first reported case of transverse myelitis following TACE. This complication underscores the importance of recognizing and managing rare adverse events associated with chemoembolization, particularly in patients presenting with acute neurological deficits post-procedure. Despite incremental symptomatic improvement, our patient continues to have significant residual symptoms, highlighting the potential long-term morbidity of this rare complication.

20) A CASE OF HYPERGLYCEMIC HEMICHOREA-HEMIBALLISM (DIABETIC STRIATOPATHY)

Rachel Johnson, MD; Colleen Nichols, MD
Aurora Health Care Program, Milwaukee, WI

Hyperglycemic hemichorea-hemiballism (HHH), also known as diabetic striatopathy, is a rare complication of uncontrolled type 2 diabetes mellitus. Patients most often present with acute onset, unilateral, involuntary, rapid, non-patterned movements of the upper and lower extremities; these movements may be mistaken for restless behavior. Expected imaging findings involve hyperdensity in the contralateral striatum on CT and hyperintensity in the same area on T1-weighted MRI. Patients usually experience remission of hemichorea within days to weeks once hyperglycemia is controlled; however, in some cases, the hemichorea persists or recurs.

A 62-year-old male with type 2 diabetes, chronic kidney disease stage 3A, and alcohol use disorder presented to the emergency department with a two-day history of abnormal involuntary movements of the right arm and leg. Neurologic exam was otherwise non-focal and demonstrated full strength and sensation with no cerebellar ataxia. Initial labs revealed glucose 285 mg/dL and evidence of acute kidney injury. Hemoglobin A1c was above the upper limit of quantification (>19.0%). A head CT was read as showing no acute intracranial pathology, so he was admitted for further workup. Subsequent brain MRI demonstrated hyperintensity in the left putamen on T1-weighted imaging, which, in retrospect, corresponded to subtle findings on CT. He was given intravenous fluids, and glycemic control was promptly achieved with a subcutaneous insulin regimen. The hemichorea significantly improved by discharge on day three and was completely resolved at follow-up on day eight.

This case is a classic example of how HHH typically presents. His workup highlights how the diagnosis can easily be missed, both clinically and on imaging, despite being identifiable with preexisting knowledge of the condition. Increased awareness of HHH is needed to prevent delays in diagnosis and potentially costly and invasive workups for other causes. Timely recognition and management are crucial for rapid symptom resolution.

21) CHRONIC DYSPNEA WITH A TWIST: A RARE, LIFE-THREATENING COMPLICATION OF UNTREATED HYPOTHYROIDISM

Evan Keiser, MD; Bradley Uyemura, MD; Ariel Bodker, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

The number of presenting symptoms for hypothyroidism are vast, with most being relatively benign. However, severe disease can present with life-threatening conditions such as myxedema coma or rarely pericardial effusion.

An 85 year old woman with a past medical history of coronary artery disease including one drug-eluting stent, hypothyroidism, and tobacco use disorder presented several months after moving to Wisconsin. She was non-adherent with medications and had not been evaluated by a physician for several years. A few weeks after moving, she developed progressive dyspnea, coughing, and wheezing that were refractory to inhalers, antibiotics, and steroids. She presented to urgent care two months after symptoms onset, where she was found to be hypoxic with chest X-ray noting hyperinflated lungs concerning for undiagnosed COPD. She was subsequently referred to the Emergency Department for further evaluation.

Physical exam demonstrated significant wheezing with inspiratory crackles, dry skin over the bilateral legs plus hands, and distant heart sounds. Without prior records, broad treatment was started for a COPD exacerbation. CT imaging to rule out a pulmonary embolism was obtained and revealed a large pericardial effusion. She was hemodynamically stable throughout her hospital course despite this effusion. A transthoracic echocardiogram was obtained and showed a severely reduced left ventricular systolic function, a large circumferential pericardial effusion with no echocardiographic evidence of tamponade physiology, and a global longitudinal strain pattern concerning for a possible infiltrative cardiomyopathy. TSH was 157 uIU/mL with an undetectable free T4, concerning for severe hypothyroidism. A serum erythrocyte sedimentation rate and C-reactive protein were within normal limits. Pericardiocentesis was performed with removed 700 mL of serous fluid that had minimal protein, negative cytology, and negative cultures. She was started on IV levothyroxine and transitioned to oral dose on discharge. In the absence of other clear inflammatory/infectious/malignant causes, it was suspected that her pericardial effusion was due to her hypothyroidism.

This case speaks to the large differential of dyspnea and emphasizes the importance of systematic reasoning when thinking about such a broad illness script. A pericardial effusion is not often a cause of chronic dyspnea, but when this finding occurs to help narrow the differential, it is important to think about untreated hypothyroidism as a rare cause. While not common, pericardial effusions in hypothyroidism are likely due to increased capillary permeability with pericardial effusions reported in 3-6% of patients with hypothyroidism. This diagnosis is trivial to rule out with rapid results and can be treated promptly.

22) PRIMARY CARDIAC SYNOVIAL SARCOMA PRESENTING AS SUPERIOR VENA CAVA SYNDROME

Aria Kenarsary, MD; Ahmed El Shaer, MBBS; Steven M. Ewer, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Background: Primary cardiac sarcomas are rare and carry a poor prognosis. Early detection is challenging, and optimal treatment remains unclear.

Case: A 24-year-old female with a 4-month history of progressive facial swelling presented with one week of pre-syncopal episodes and was found to have a right atrial (RA) mass on chest CT angiography which was confirmed by echocardiography. Cardiac MRA revealed an enhancing mobile mass at the superior cavo-atrial junction extending into the RA, associated with superior vena cava (SVC) syndrome (Figure A and B). Percutaneous transvenous biopsy of the mass revealed synovial cell sarcoma. Positron emission tomography showed 18F fluorodeoxyglucose avidity of the mass without distant metastases. She underwent surgical resection of the mass, followed by adjuvant radiation therapy and 6 cycles of ifosfamide. She remained in remission for 38 months until surveillance imaging revealed new pulmonary lesions. Biopsy confirmed pulmonary and mediastinal metastases, leading to palliative therapy with pazopanib. She presented 2 months later with new left ventricular systolic heart failure, a large pericardial effusion, and a new pericardial mass, indicating the progression of her primary cardiac sarcoma.

Clinical Decision Making: The clinical manifestation of cardiac tumors is dictated by their location leading to variable presentations. Our patient's progressive facial swelling was initially misattributed to idiopathic angioedema. Suspicion of an intracardiac tumor arose when circulatory complications became evident. Primary cardiac sarcomas have a median survival of 6-12 months. Although no standard treatment exists due to a lack of randomized clinical trials, retrospective studies suggest surgical resection followed by adjuvant chemoradiation may prolong survival. Therefore, our patient received chemoradiation following tumor resection.

Conclusion: Primary cardiac sarcomas are rare and present variable symptoms based on location, making early detection challenging. High clinical suspicion is crucial for early diagnosis, with cardiac MRI and echocardiography as key diagnostic modalities. Complete surgical resection with adjuvant chemo-radiation can prolong survival.

23) IMPLANTABLE DEFIBRILLATOR CONSIDERATIONS FOR A PATIENT WITH SEVERE DILATED CARDIOMYOPATHY, HISTORY OF EMBOLIC STROKE, AND EXTENSIVE VASCULAR AND INTRACARDIAC THROMBOSES: TO DFT OR NOT TO DFT

Aria Kenarsary, MD; Juanita Fernandez, MD; Sunil K. Vasireddi, MD, FACP
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Background: Implantable cardioverter-defibrillators (ICDs) are indicated for primary and secondary prevention of sudden cardiac death in patients with severe cardiomyopathy. While conventional transvenous ICDs (TV-ICD) do not routinely require defibrillation threshold (DFT) testing at implantation, DFT testing remains a class I recommendation for extravascular ICD systems such as a subcutaneous ICD (S-ICD).

Case: A 43-year-old male with hypertension, hyperlipidemia, TTN dilated cardiomyopathy (ejection fraction 10%), non-sustained ventricular tachycardia, and chronic kidney disease had sustained a cerebrovascular accident (CVA) resulting in a large left posterior temporal lobe infarct without an identifiable cause on imaging (TTE and cardiac MRI). A few weeks later, he presented with heart failure exacerbation with a 3-day history of progressive right upper extremity swelling and pain. He was found to have extensive, unprovoked DVTs involving his right internal jugular, subclavian, axillary, brachial, and cephalic veins, a left ventricular thrombus, and a subsegmental pulmonary embolus. He had an unremarkable hematologic workup and was anticoagulated with warfarin after failing a DOAC. Despite symptomatic improvement in the subsequent months with goal-directed medical therapy, his LVEF did not improve. The patient did not have pacing needs and ultimately underwent intramuscular implantation (between the serratus and latissimus dorsi) of the S-ICD system for primary prevention.

Clinical Decision Making: Conventional TV-ICD comprises a pulse generator and one or more leads extending from the generator to the myocardium via a transvenous route through the axillary, subclavian, and superior vena cana. However, TV-ICD systems include risks associated with insertion (damage of vasculature, cardiac perforation, pericardial effusion) as well as long-term complications such as vascular thrombosis, vascular stenosis, endocarditis/lead infection, lead malfunction/fracture, and valvular injuries. The S-ICD is an alternative defibrillation strategy that is entirely extravascular and does not pose a risk for endovascular or intracardiac complications.

In this case, extensive DVTs involving the venous vasculature of the neck and limb would not only make the endovascular access for TV-ICD placement challenging but also increase the risk of further vascular injury, infection, DVTs or chronic vascular stenosis.

DFT testing examines the ability of the ICD system to detect and treat a sustained ventricular arrhythmia that is purposefully induced intra-operatively. Several studies with TV-ICD have shown that routine DFT testing is not required and might pose an increased risk for hemodynamic compromise, stroke, and death. However, DFT testing is generally recommended by guidelines with all newly implanted S-ICDs owing to fewer studies, variable implantation techniques, and higher energies needed to defibrillate successfully. Given that our patient had severe LV dysfunction, chronic DVTs with an LV thrombus, and that the S-ICD system parameters were very favorable (impedance: 60 ohms, praetorian score: 30), DFT testing was not performed.

Conclusion: Subcutaneous ICD is an extravascular defibrillation strategy that can be ideal in patients with either limited vascular access or high risk for endovascular and intracardiac complications. The risks and benefits of DFT testing must be personalized in the context of each patient's unique risks, the implantation technique, and the final system parameters.

24) A CASE OF MALIGNANCY ASSOCIATED MYOSITIS.

Patrick Kittredge, MD, MMS; Sean O'Neill, MD, FACP
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Background: Cholangiocarcinoma is an aggressive epithelial malignancy of the hepatobiliary tree which typically has a late presentation with a poor prognosis. It has a slight predominance for males over the age of 50. Cholangiocarcinoma is classified by its anatomic location which includes intrahepatic, perihilar, and distal disease. This type of malignancy has been associated with multiple paraneoplastic syndromes. Here we will discuss a case of presumed cholangiocarcinoma leading to paraneoplastic myositis resulting in rhabdomyolysis and renal failure.

Case presentation: 75-year-old-male with a remote history of pulmonary embolism, hypertension, and hyperlipidemia, presented with 3 weeks of loose stools and 3 days of worsening generalized proximal muscle weakness, jaundice, and pruritus. Physical examination revealed mild right upper quadrant pain with palpation, diffuse jaundice with scleral icterus and bilateral upper and lower extremity proximal muscle weakness. Initial lab workup revealed Alk phos of 628, ALT 119, AST 453, total bilirubin of 19 with a direct bilirubin of 14, raising concern for biliary obstruction. CT scan of the abdomen revealed intrahepatic biliary dilation and a 3mm calcification at the head of the pancreas. An ERCP revealed severe hepatic duct stricture leading to mild intrahepatic ductal dilation. No stones were identified. A MRCP was then performed which showed a 3.9x3.7 enhancing liver lesion with capsular retraction, concerning for cholangiocarcinoma. Given these findings, interventional radiology was consulted for percutaneous transhepatic cholangiography with placement of biliary drain. During his hospital stay, his creatinine increased from 1.9 to 6.3, BUN increased from 26 to 97 and his creatine kinase (CK) was found to be elevated to 49,587. CK continued to rise despite IV hydration, which was concerning for malignancy associated myositis vs paraneoplastic syndrome. He was started on pulse dose steroids, however his rhabdomyolysis continued to worsen, necessitating hemodialysis. Oncology was consulted, however due to worsening rhabdomyolysis and rising bilirubin levels, he was not a candidate for chemotherapy. Due to his worsening condition and an episode of aspiration, his goals of care were transitioned to comfort measures. He unfortunately passed 8 days after his admission.

Discussion: Cholangiocarcinoma is associated with many paraneoplastic syndromes. This patient developed severe muscle breakdown with CK rising over 150,000 U/L that was refractory to steroids and led to acute renal failure. This case exemplifies the speed and severity of myositis related to malignancy which led to his inability to receive treatment for his suspected cholangiocarcinoma. With new malignancy often being the focal point of diagnostic studies and care, this case is a reminder of the other complications that can arise in uninvolved organ systems.

25) MORE FOR MOYAMOYA: DISCUSSION OF NON-SURGICAL MANAGEMENT

Anya Koza, DO; Victoria Gillet, MD
Aurora Health Care Program, Milwaukee, WI

Background: Moyamoya disease (MMD) is a rare intracranial vasculopathy characterized by the progressive occlusion of an intracranial artery with development of friable collateral circulation. Complications include cerebral ischemia and hemorrhage. Guidelines recommend neurology to perform medical management, but in practice it often falls to a primary care physician (PCP) due to insurance barriers, travel issues, or specialist wait times. We describe a practical, non- surgical approach to the rare presentation of MMD in the primary care setting so internists can apply best practices to prevent the progression of MMD.

Case: A 63-year-old post-menopausal female with non-bleeding uterine fibroids, on oral contraceptives, and untreated hyperlipidemia presented inpatient with a temporal headache, vertigo, and presyncope lasting three months. Computed tomographic angiography showed severe stenosis at the origin of the left M1 segment of the left middle cerebral artery with collateralization suggestive of a unilateral moyamoya vasculopathy. She was discharged with supportive care for her vertigo. As an outpatient, she started on low-dose aspirin and high intensity statin and was promptly referred to neurosurgery. Currently, she is being evaluated at the Mayo Clinic.

Decision making: MMD's progressive nature warrants a proactive approach by PCPs to mitigate future cerebrovascular events. At the time the patient presented, the wait to establish with neurology was many months, so medical management was initiated in the primary care setting to capitalize on the window of opportunity before significant neurologic deficits manifested. Intervention with aspirin, statin, and blood pressure control was initiated. We sent the patient directly to neurosurgery based on imaging and symptoms to discuss options for revascularization.

Conclusion: PCPs can have a pivotal role in the non-surgical management of MMD when focused on early pharmacologic strategies and timely referrals to neurosurgery for definitive treatment. Insights gained reinforce how preventative strategies, even in rare diseases, can impact patient outcomes.

26) LABETALOL USE IN A PATIENT WITH UNDISCLOSED COCAINE USE LEADS TO ADMISSION

Nathan Kuttickat, DO; Colleen Nichols, MD
Aurora Health Care Program, Milwaukee, WI

Introduction: Historically, using beta blockers in patients with active cocaine use was considered taboo due to concerns about unopposed alpha stimulation, which can present a life-threatening complication. While emerging studies suggest beta blockers' safety in cocaine users, this risk remains significant. Beta blockers are effective in managing hypertension and tachycardia from cocaine use but can worsen the clinical course in some patients.

Case Description: A 42-year-old male presented to the Emergency Department with severe left shoulder pain radiating down the arm after a night of heavy alcohol use. His blood pressure was 175/119, and his heart rate was 114. He was moved quickly from triage due to his discomfort and agitation. He received 20 mg IV Labetalol before a CT scan. Subsequently, he became tachycardic, hypoxic, and his blood pressure increased. The patient was started on supplemental O2 and admitted for further management. A urine drug screen revealed cocaine use, which he either did not disclose or was unaware of. His initial complaint of left arm pain was found to be a chronic issue. A chest X-ray and CT scan suggested pulmonary edema. Labetalol was discontinued, and clonidine was started to manage both hypertension and post-cocaine anxiety. He was also restarted on his prior medications, amlodipine and lisinopril-hydrochlorothiazide, and given lorazepam for additional anxiolytic benefits. By the next morning, heart rate normalized, and he was weaned off supplemental oxygen. With his blood pressure under control, he was discharged home with close follow-up with his primary care physician.

Discussion: This case illustrates that while the interaction between cocaine and beta blockers may be rare, it is far from theoretical. Cocaine use is unfortunately common, with resultant nonischemic cardiomyopathy (NICM), hypertensive emergencies, and tachycardia frequently presenting. High clinical suspicion and risk stratification should be exercised before using beta blockers to prevent unintended negative outcomes.

27) DIFFICULT DIAGNOSIS OF DPGN IN AN ADULT

Nathan Kuttickat, DO; Cory Barnish, DO; Colleen Nichols, MD
Aurora Health Care Program, Milwaukee, WI

Introduction: The occurrence of diffuse proliferative glomerulonephritis (DPGN), particularly post-streptococcus infection, is well anticipated in children but less suspected in adults. In adults, the constellation of presenting symptoms makes the diagnosis difficult without high clinical suspicion.

Case description: A 35-year-old male with a history of polysubstance abuse presented with a three-day history of ankle swelling and abdominal pain. On admission, he met SIRS criteria. He was started on empiric vancomycin and ceftriaxone, and Infectious Disease was consulted due to an unknown source of infection. He had bilateral pleural effusions, and his urine drug screen was positive for cocaine and fentanyl. Additionally, he was found to have acute kidney injury (AKI) and a low albumin level of 2.2. His case was further complicated by active opiate withdrawal with anxiety and agitation. He was not agreeable to Suboxone, requiring extensive adjuvant medical therapy.

A comprehensive infectious, malignancy, and autoimmune workup was ordered. He was found to have profound proteinuria, and Nephrology was consulted. The workup was largely unremarkable with lymph node biopsy showing reactive lymph tissue. Kidney biopsy revealed diffuse proliferative glomerulonephritis and Nephrology suspected an infectious cause. However, he left the hospital but returned two weeks later with acute hypoxic respiratory failure due to pulmonary edema, worsening bilateral pleural effusions, and admitted inhaling heroin. He was admitted to the ICU for BiPAP and diuresis. An anti-streptolysin titer was elevated at 584. After discussion with Nephrology, he started on 1g Solumedrol. His creatinine remained elevated, but albuminuria and swelling improved.

Discussion: This case demonstrates the difficulty in diagnosing post-strep DPGN in an adult with multiple comorbidities. The ASO was only discovered due to a broad investigation during second admission. The lengthy time before diagnosis precluded timely antibiotics, likely contributing to his edema and worsening pleural effusions, emphasizing the importance of maintaining a high index of suspicion.

28) FOCAL SEGMENTAL GLOMERULOSCLEROSIS IN A PATIENT WITH LARGE B-CELL LYMPHOMA

Remy Lee, MD; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin Program, Milwaukee, WI

Background: Focal segmental glomerulosclerosis (FSGS) is a nephrotic syndrome characterized by sclerosis of parts of select glomeruli of the nephron. Although nephrotic syndrome has been associated with various malignancies, a clear pathophysiological relation has not been established.

Case Presentation: A 21-year-old male with a history of obesity and premature birth initially presented to the emergency department with hematuria. He was diagnosed with urinary tract infection and discharged home with antibiotics, and the hematuria resolved. One year later, he returned to the emergency department with abdominal pain and hematochezia. Imaging identified an ileocecal intussusception with a 5.3-cm mass. He underwent mass resection, which revealed a large B-cell lymphoma upon pathological examination. He was subsequently referred to outpatient Oncology and started on DA-EPOCH-R chemotherapy.

One month after starting chemotherapy, the patient presented again to the emergency department with shortness of breath. Imaging revealed a pulmonary embolism. He was started on a heparin drip and admitted to the hospital. The next day, he developed hematuria again, and the heparin drip was halted. Urinalysis revealed red blood cells and protein. Subsequent evaluation was notable for 8g of protein in a 24-hour urine collection, serum albumin of 3.5 mg/dL and bilateral pedal edema, confirming a diagnosis of nephrotic syndrome. Nephrology was consulted, and a renal biopsy revealed FSGS and IgA nephropathy. The patient was started on prednisone for FSGS, and the heparin drip was transitioned to apixaban. Elevated blood pressures were also noted, and bumetanide and losartan were initiated, the latter also providing renoprotection. He was discharged with plans to follow up with Nephrology for FSGS and Hematology/Oncology for lymphoma and pulmonary embolism.

Discussion: While numerous cases report associations between nephrotic syndromes and malignancies, the pathophysiological relationship between the two remains speculative and has been limited to hypotheses discussed in case reports. Few cases have reported specifically on the association between FSGS and non-Hodgkin's lymphoma, as observed in this patient's case. Irrespective of any causal link, the coexistence of the two disease processes increases the risk of comorbidities, necessitating both therapeutic intervention and supportive care.

29) WAIT! WE DID NOT PLACE A PERMANENT PACEMAKER FOR COMPLETE HEART BLOCK, A CASE OF IMMUNE CHECKPOINT INHIBITOR (ICI)-ASSOCIATED MYOCARDITIS PRESENTING WITH HEART BLOCK

Helena Ma, MD; Dalia Sriwi, MD; Parag Tipnis, MD, FACP
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Case: A 76-year-old woman with stage IIB melanoma with unresectable, recurrent disease, hypertension, hyperlipidemia, and former tobacco use (30 pack year history) presented with episodes of unresponsiveness. She would intermittently become unconscious with high-grade AV block. She was acutely transvenously paced and stabilized. Of note, she was started on Nivolumab/Relatimab 30 days prior to admission.

Physical exam notable for bradycardia but otherwise normal. Notable labs included elevated troponin 1.76, WBC 18.9, ESR 22, CRP 6.7. Lyme titer was normal. Infectious workup was otherwise negative. Echocardiogram showed normal LV size and wall thickness and EF of 65% and normal valves. ECG showed sinus rhythm with complete heart block and intraventricular conduction delays while the ECG 3 days prior showed normal conduction and poor R wave progression.

Discussion: The patient's initial presentation of high grade AV block and elevated troponin was nonspecific and the differential included coronary artery disease, viral myocarditis, Lyme disease, and thyroid abnormalities. There was high suspicion for ICI-myocarditis since she was recently started on Nivolumab/Relatimab. She was empirically given IV methylprednisolone and a semi-permanent pacemaker was placed. Cardiac MRI could not be obtained due to the semi-permanent pacemaker. Subsequently, she underwent a coronary angiogram with endomyocardial biopsy. She had normal coronary arteries. Endomyocardial biopsy showed lymphohistiocytic infiltration consistent with ICI-myocarditis. She was treated with high dose steroids and mycophenolate for persistently elevated troponin. After several days of high dose steroid treatment, she regained normal conduction, and her pacemaker was removed. She was discharged with close cardiology and oncology follow up.

Myocarditis is a rare complication of immune checkpoint inhibitors with significantly high mortality for which early diagnosis and treatment is important. Diagnosis is generally made with cardiac MRI or cardiac biopsy. The main cause of ICI-myocarditis is thought to be attributed to CD4+ T cell mediated inflammation. There is no standardized approach for management of ICI-myocarditis currently, however, most cases have been treated with high dose steroids.

As the number of cancers treated with immune checkpoint inhibitors expand, the number of cases of myocarditis from ICIs may increase. A complete history of recent cancer treatments in combination with cardiac biomarkers, cardiac imaging when possible, and endomyocardial biopsy represent a pragmatic way to diagnose most cases of ICI-myocarditis. Timely diagnosis of ICI-myocarditis is crucial, as early detection and treatment with immunosuppressants prevent mortality.

30) AN UNUSUAL CASE OF GONOCOCCAL SEPTIC ARTHRITIS AND OSTEOMYELITIS COMPLICATED BY INFECTED HARDWARE

Mariah Mack, MD; David R. McNamara, MD
Gundersen Health Program, La Crosse, WI

Introduction: Neisseria gonorrhea is increasing in prevalence in the United States. While gonococcal arthritis is a recognized complication of disseminated gonococcal infection, osteomyelitis caused by Neisseria gonorrhea is rare. To our knowledge, only two cases of disseminated gonococcal infection complicated by prosthetic joint infections have been reported. We report a case of disseminated gonococcal infection complicated by septic arthritis and osteomyelitis with infection of retained hardware.

Case report: A healthy 41-year-old male presented with left knee pain. He had a history of left distal femur and patella fracture 25 years earlier, managed with open reduction and internal fixation. The patient had been doing well until he presented to Urgent Care with sudden onset knee pain and swelling which began the evening prior. He did not have any preceding trauma or fall. Initial evaluation revealed stable vital signs, elevated white blood cell count (997,000 cells/mL), and elevated C-reactive protein (7.0 mg/dL). Radiographs demonstrated a moderate joint effusion. Two days later, arthrocentesis yielded purulent fluid with neutrophilic predominance (WBC 99,246 cells/mL, 89.1% neutrophils). Cultures were obtained. The following day, the patient presented to the emergency room with worsening pain. A PCR panel on the previous synovial fluid sample resulted positive for Neisseria gonorrhea. The patient had no symptoms of urethritis, no male sexual partners, and no recent oral-genital sexual contact. HIV and syphilis antibodies nonreactive. Oropharyngeal swab was positive for gonorrhea by NAAT. Treatment with ceftriaxone, vancomycin, and doxycycline was initiated. Orthopedic and Infectious Disease specialists recommended operative management. Operative findings demonstrated significantly more aggressive disease than anticipated, including an abscess extending subcutaneously halfway down anterolateral leg, end-stage lateral femoral condyle and patellar arthritis, Brodie's abscesses, and osteomyelitis of the patella and distal femur with gross purulence around the hardware plate. The plate and screws were removed, though several deep screw fragments were unable to be retrieved. On post-operative day 2, the patient underwent repeat debridement and removal of retained screws. Surgical cultures did not grow any organisms, although these were obtained receiving ceftriaxone in the emergency department. The initial synovial fluid sample cultures grew Neisseria gonorrhea which was beta-lactamase positive. Due to concerns about ceftriaxone-resistance, the patient was treated with ciprofloxacin, ertapenem, and doxycycline. He was discharged on post-operative day 7. Neisseria gonorrhea isolate susceptibilities demonstrated isolate was susceptible to ceftriaxone and cefixime, but only intermediately susceptible to ciprofloxacin. Ertapenem and ciprofloxacin were discontinued. The patient was transitioned to ceftriaxone then oral cefixime, to complete at total antibiotic course of 6 weeks. At 10-month follow-up the patient was ambulating without assistive device, and radiographs demonstrated stable appearance of distal femur.

Discussion: This case demonstrates successful treatment of gonococcal hardware-associated osteomyelitis with debridement, hardware removal, and 6-week antibiotic course. This case highlights the challenge of managing gonococcal osteomyelitis involving retained hardware amidst increasing antibiotic resistance. As gonorrhea prevalence rises and PCR is increasingly utilized for diagnosis, recommendations regarding management strategies for hardware-associated gonococcal osteomyelitis are needed.

31) A CASE OF CUSHING SYNDROME IN A PATIENT WITH METASTATIC NEUROENDOCRINE TUMOR

Himani Madnawat, MD; Jefferson Driscoll; Kathlyn Fletcher, MD
Medical College of Wisconsin Program, Milwaukee, WI

Background: Cushing syndrome encompasses a spectrum of disorders characterized by hypercortisolism. This case report details a unique presentation of endogenous Cushing syndrome due to ectopic ACTH production from a metastatic neuroendocrine tumor.

Case Presentation: A 76-year-old male with a medical history of chronic kidney disease stage 4, hypertension, and mitral regurgitation presented with progressive weakness, confusion, poor oral intake, and insomnia. His physical examination revealed a frail, chronically ill appearance without acute distress, notable for a 2/6 systolic murmur and bilateral lower extremity weakness.

Investigations: Laboratory tests showed leukocytosis (WBC 15x10^9/L) with a left shift, thrombocytopenia (PLT 63x10^9/L), hypokalemia (K 2.1 mmol/L), elevated creatinine (6.75 mg/dL), and significantly elevated liver enzymes (AST 127 U/L, ALT 99 U/L). Hormonal assays indicated elevated AM cortisol (2376 nmol/L), urine free cortisol (4349 nmol/24h), and ACTH (36.6 pg/mL). A diagnosis of endogenous Cushing syndrome was confirmed through elevated 24-hour urine cortisol levels and elevated serum cortisol despite low-dose dexamethasone suppression. Imaging studies, including a liver Doppler, identified a left portal vein thrombosis and multiple liver lesions suggestive of metastases.

Diagnosis: The differential diagnosis for hypercortisolism includes primary adrenal hypercortisolism, pituitary-dependent Cushing disease, and ectopic ACTH secretion. The absence of suppression in high-dose dexamethasone and no response to CRH stimulation tests pointed towards an ectopic source.

Management and Outcome: Initial management included ketoconazole for cortisol suppression and potassium replacement for hypokalemia. Subsequent biopsy of liver lesions revealed a metastatic neuroendocrine tumor, likely of pulmonary origin. Despite aggressive management, the patient's condition deteriorated, leading to acute kidney injury and further deconditioning. Palliative care was initiated, and the patient passed away shortly thereafter.

Conclusion: This case highlights the complexity of diagnosing Cushing syndrome in the context of ectopic ACTH production. Metastatic neuroendocrine tumors, though rare, should be considered in the differential diagnosis of hypercortisolism. Early recognition and tailored treatment are crucial for managing this challenging condition. Further research into the pathophysiology and optimal therapeutic strategies for ectopic ACTH-producing tumors is warranted.

32) A RARE COMPLICATION OF NON-SMALL CELL LUNG CANCER: METASTATIC DISEASE WITH ADRENAL HEMORRHAGE

Robert Marker, DO; Stephen Smetana, DO; Minuja Muralidharan, MD
Aurora Health Care Program, Milwaukee, WI

Introduction: Non-small cell lung cancer (NSCLC) is often diagnosed after metastatic disease is already present. A common site of metastatic disease in NSCLC is the adrenal glands. This site of metastasis is usually silent but rarely may cause acute adrenal hemorrhage which is a complication with a high mortality rate. Here we present a patient with acute adrenal hemorrhage secondary to metastasis from NSCLC.

Case Description: Our patient is a 45-year-old female with a history of Langerhans cell histiocytosis, chronic obstructive pulmonary disease and recently diagnosed lung adenocarcinoma who presented with three days of right flank pain. Computed tomography angiogram of the chest abdomen and pelvis demonstrated a 6.2 centimeter right adrenal gland metastasis with evidence of posterior hemorrhage. She was admitted for hemodynamic monitoring and pain control. Her hemoglobin remained stable, and her adrenocorticotropic hormone levels remained within normal parameters. She symptomatically improved and was discharged without surgical or endovascular intervention.

Discussion: Acute adrenal hemorrhage is a rare disorder which involves bleeding of the adrenal gland into the adrenal capsule and often into the retroperitoneal space. This condition is often caused by trauma, infection, adrenal stress and less often by tumors. Adrenal hemorrhage carries a high mortality rate due to the potential for hemorrhagic shock and adrenal insufficiency. Non-small cell lung cancer will often metastasize to the adrenal glands, but these metastases tend to have a low risk of bleeding. There have been less than 20 documented cases of symptomatic acute adrenal hemorrhage in the medical literature. Due to the low incidence of this condition, there are no clear treatment recommendations regarding the management. We present this case of abdominal pain secondary to adrenal hemorrhage related to a metastasis from non-small cell lung cancer to highlight the need for close monitoring of hemodynamics and adrenal insufficiency such patients.

33) INFECTIVE ENDOCARDITIS IN A 49-YEAR-OLD MALE WITHOUT VALVULAR INSULT

Mary Mayerchak, MD; Emily Dolan, MD
Gundersen Health Program, La Crosse, WI

Infective endocarditis involves the process of colonization and inflammation of the cardiac valve endocardium, and it may present with a wide variety of clinical signs. The aim of this presentation is to encourage close review of patients with subacute symptoms in the setting of infection of undetermined source and consider endocarditis even if minimal risk factors are present.

A 49-year-old male with history of neurogenic bladder which required self-catheterization two to three times daily presented to clinic with complaint of headaches, fatigue, malaise, vision/balance issues, and "tremor" for several months. Past medical history significant for depression and prior alcohol use disorder. His primary care physician adjusted his SSRI due to concern for somatic symptoms. The patient was then admitted one month later, with CT chest/abdomen/pelvis with contrast demonstrating multiple splenic and renal infarcts, as well as peripheral infarction of the liver. MRI of the head w/ and w/o contrast demonstrated multiple cerebral foci with bilateral involvement within the left frontal/temporal/parietal lobes and right frontal lobe. Blood and urine cultures returned positive for enterococcus faecalis. TTE and TEE demonstrated lobulated masses on mitral leaflets. IV ampicillin and ceftriaxone were started for 6 weeks of therapy, eventually necessitating a consult to cardiothoracic surgery with mitral valve replacement completed 3 months after initial diagnosis.

Here we present a rare case of enterococcus endocarditis in a patient with minimal risk factors. Enterococcus endocarditis accounts for 13-18% of all endocarditis cases, and it has a markedly higher 6-month relapse rate of 7% compared to other pathogens. Enterococcus faecalis has several virulence factors that allow for increased aggregation and resistance to therapy. Cardiac surgery and antibiotic combination are cornerstones of treatment to prevent relapse. Risk factors for infective endocarditis involve damage to heart valves (age, artificial valves, devices) and weakened immune systems (neoplastic disease, diabetes, HIV, etc). This patient's young age, unremarkable history without immunocompromising conditions, and lack of valvular damage do not provide a clear underlying valvular insult for bacteria to form a vegetation.

Infective endocarditis is generally rare in hosts with normal hearts that have minimal risk factors. However, it should be considered in patients presenting with subacute symptoms given the potential for severe complications associated with embolization.

34) TIMING IS CRITICAL: PROTON PUMP INHIBITOR-INDUCED ANGIOEDEMA

Lydia Mbatidde, MD; Mubashira Sarnaik, MD
Marshfield Clinic Program, Marshfield, WI

Background: Pantoprazole is a proton pump inhibitor (PPI) commonly used in both the inpatients and outpatients' settings, and a guideline recommended first line treatment for upper gastrointestinal bleeding. Angioedema (AE), a localized subcutaneous and/or subcutaneous swelling due to capillary leakage of fluid into the interstitium and is a critical component in the assessment, and management of anaphylaxis. Drug induced AE has been reported for several medications, but PPI induced AE is has rarely been reported in clinical practice and therefore stands a risk of going unrecognized unless in severe obvious situations.

Case Report: We will discuss the case of a 97-year-old female, with past medical history of Atrial Fibrillation (Afib) on warfarin, gastric ulcer disease, heart failure with preserved ejection fraction (HRpEF), hypertension, hypothyroidism, hyperlipidemia, and stage 3 chronic kidney disease. She presented to the emergency room (ER) with concerns of black stools for one day associated with coffee-ground emesis. While in the ER, she was hemodynamically stable. Her laboratory findings revealed a hemoglobin of 10.3 and international normalized ratio (INR) of 5.0. Warfarin was stopped and she was treated with prothrombin complex concentrate, pantoprazole, and vitamin K. On the second day of admission, she developed severe tongue and neck swelling with an audible wheeze, about 40 minutes after early morning dose of pantoprazole. A rapid response was initiated, and patient had significant respiratory distress, with reduced SpO2. She was treated with epinephrine, methylprednisolone, and diphenhydramine and she improved significantly within 10 to 15 minutes without intubation. Blood draws taken 2 hours after the event revealed normal serum tryptase, normal C4 complement and high C2 complement which were incongruous with anaphylaxis. This case confirms the possibility for PPI induced angioedema and the value to timely laboratory draws to support the characterization of the anaphylaxis.

Conclusion: Clinicians should be aware that PPI induced anaphylaxis although uncommon is still a possibility. To enable characterization of the anaphylaxis, blood draws should be taken off in the first 1 hour of the event.

35) A RARE CASE: HYPOCOMPLEMENTEMIC URTICARIAL VASCULITIS SYNDROME

Samuel Miller, MD
Gundersen Health Program, La Crosse, WI

Introduction: Hypocomplementemic Urticarial Vasculitis Syndrome (HUVS) is a rare form of vasculitis with the hallmark findings of hypocomplementemia and urticaria. Similar to other forms of systemic vasculitis, its clinical presentation may be limited to one organ system or it may affect multiple organ systems. This syndrome, similar to many other rheumatologic and inflammatory conditions, co-occurs with other autoimmune and inflammatory conditions, most often systemic lupus erythematosus.

Case Description: A 39-year-old healthy male presented to his primary care physician with one year of an urticarial rash with occasional joint discomfort and intermittent abdominal pain. Urticarial and nodular lesions become present with exposure to heat, cold or trauma. His symptoms have been prevalent and intermittent for 2-3 years but are becoming more frequent. Initial physical exam showed hypopigmented, macular rash of the trunk and back with raised nodular lesions of the left arm and forearm. Initial basic metabolic panel, complete blood count with differential, urinalysis and immunoglobulin testing was significant for only a monoclonal gammopathy of undetermined significance. He was referred to Rheumatology for further evaluation and testing. His rheumatologic workup showed a low-titer ANA (1:320 with speckled pattern), low C3, C4, CH 50 with negative C1-esterase inhibitor antigen. A punch biopsy of a left forearm lesion was performed which showed leukocytoclastic vasculitis. His ds-DNA, SSA, SSB, smith, RNP, SCL-70, JO-1, centromere and ribosome p antibody testing was negative. There was minimal evidence of ocular, musculoskeletal, cardiopulmonary, renal, gastrointestinal or neurologic involvement, and no significant evidence of SLE on physical exam or laboratory testing. Treatment was initiated with mycophenolate mofetil. Six months later, no improvement was noted on the physical exam or with the patient's subjective symptoms. His mycophenolate mofetil dose was increased and hydroxychloroquine was added for further treatment.

Discussion: HUVS is a rare form of vasculitis that is characterized by hypocomplementemia and vasculitis. Major and minor criteria exist for diagnosis. Major criteria include urticaria for more than 6 months and hypocomplementemia; minor criteria include evidence of vasculitis on skin biopsy, arthralgia or arthritis, episcleritis or uveitis, abdominal pain, glomerulonephritis and positive C1q preciptin testing. Both major criteria and two minor criteria are required for diagnosis. Our patient met both major criteria and three minor criteria for diagnosis of HUVS. This case highlights a rare cause of chronic urticaria and demonstrates a need to rely on more information than a positive C1q preciptin test since our patient's testing was negative. Unfortunately, clear treatment guidelines do not exist for HUVS, but treatment with immunosuppressants and/or immunomodulators are the first-line for mild disease with high doses of systemic steroids reserved for severe systemic cases.

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

Iqra Naeem, MD; Aanchal Chaudhary, MD; Jason C. Tompkins, MD
Marshfield Clinic Program, Marshfield, WI

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.

37) SEVERE ADRENAL CRISIS WITH UNUSUAL METABOLIC ABNORMALITIES

Iqra Naeem, MD; Khurram Irshad MD; Amanat Grewal MD
Marshfield Clinic Program, Marshfield, WI

Adrenal insufficiency (AI) occurs when there is primary adrenal failure or disruption of the hypothalamic-pituitary axis, leading to inadequate steroid secretion. Primary adrenal insufficiency is known for its wide range of presentations, often resulting in delayed or incorrect diagnoses. Metabolic derangements like euglycemic or hypoglycemia starvation ketoacidosis are also rarely seen with adrenal crises. We aim to highlight one such presentation of a young lady with poor oral intake and evidence of severe hypotension and metabolic acidosis. This report emphasizes the diagnostic challenges and management complexities of AI in the context of unusual metabolic presentations.

A 24-year-old female presented to the emergency department with a history including fatigue and orthostatic lightheadedness. She had experienced a 100-pound weight loss in the last six months and darkening of the skin. Patient exhibited significant hypotension, with an average mean arterial blood pressure (MAP) of 40. Blood tests revealed mild leukocytosis, hyponatremia and non-PTH-dependent hypercalcemia with elevated creatinine. Initial impression was septic shock with an unknown source and possible malignancy; however, inflammatory markers were barely elevated, and imaging was unremarkable. Further blood work revealed baseline cortisol levels of 0.5. We resuscitated her with IV fluids and 10 mg of IV dexamethasone, along with empiric antibiotics, after cultures were taken. Initial fluid resuscitation didn't show considerable improvement in MAPs necessitating IV pressors. An ACTH stimulation test showed a nearly unchanged cortisol level of 0.9 after 1 hour, confirming the diagnosis of an adrenal crisis. We started high-dose steroids, hydrocortisone (100 mg bolus and 50 mg q6 hours). However, high anion gap metabolic acidosis with ketoacidosis and hypoglycemia was a unique challenge in this case. She required escalating pressor support and had worsening acidosis initially. Patient was treated for starvation ketosis with evidence of significant weight loss and normal HbA1c. She was given intravenous dextrose and sodium bicarbonate drip until acidosis improved. Pressor support was gradually reduced after a few hours of the above management, with a near-complete resolution of acidosis and hypercalcemia within the next 6–8 hours. Blood cultures returned negative, and the patient was discharged on day 4. She is on fludrocortisone 1 mg and hydrocortisone 15 mg and 10 mg in the morning and evening, respectively, with clear instructions on stress dosing in case of illness. At a 9-day outpatient follow-up, her orthostatic dizziness and hypotension had resolved, and she had gained 13 pounds.

Adrenal crises are critical emergencies characterized by severe cortisol deficiency, often precipitated by stressors such as infections or abrupt glucocorticoid withdrawal. The electrolyte and metabolic abnormalities in AI are challenging due to significant overlap with other acid-base disorders like DKA. Unlike diabetic ketoacidosis, where insulin therapy predominates, the management approach here focused on fluid resuscitation and glucose administration to reverse ketosis without exacerbating hypoglycemia. Although very rare, type 1 diabetes can be masked by adrenal insufficiency and present with euglycemic ketoacidosis. It should be considered in similar scenarios. This case highlights the importance of early recognition and comprehensive management to mitigate morbidity and mortality in adrenal crises.

38) A RARE CASE OF MPO-ANCA POSITIVE GRANULOMATOSIS WITH POLYANGIITIS

Khushboo Patel, MD; Hardik Patel, MD; Jayanth Vedre, MD
Marshfield Clinic Program, Marshfield, WI

Approximately 80% cases on Granulomatosis with polyangiitis (GPA) are typically associated with cytoplasmic antineutrophil cytoplasmic antibodies (C-ANCA) targeting proteinase 3 (PR3), rare cases have been reported in association with myeloperoxidase (MPO) perinuclear anti-neutrophil cytoplasmic antibodies (P-ANCA) and even rarer cases have reported which were ANCA negative.

MPO-ANCA is more commonly associated with microscopic polyangiitis (MPA), another type of ANCA-associated vasculitis, but its presence in GPA has been documented, albeit less frequently (less than 20%). The association of GPA with MPO-ANCA may lead to atypical clinical presentations and unique complications, such as diffuse alveolar hemorrhage.

We present a case of acute respiratory failure, after a series of investigations which was ultimately diagnosed with diffuse alveolar hemorrhage in the setting of rapidly progressive glomerulonephritis (RPGN) due to P-ANCA MPO positive small-vessel vasculitis with granulomatous inflammation indicating GPA.

39) ATYPICAL PRESENTATION OF REVERSIBLE CEREBRAL VASOCONSTRICTION SYNDROME

Khushboo Patel, MD; Hardik Patel, MD; Ahmed Zahid, MD
Marshfield Clinic Program, Marshfield, WI

Reversible cerebral vasoconstriction syndrome represents a group of disorders associated with reversible cerebral arterial narrowing resulting in identical clinical features with main pattern of presentation being thunderclap headaches. Absence of headache is rare.

RCVS has been reported using variable terminologies like migrainous vasospasm, thunderclap headache associated vasospasm, drug-induced cerebral arteritis, postpartum cerebral angiopathy, CNS pseudo vasculitis.

In our case, the patient exhibited clinical picture consistent with RCVS, including seizures, and multivessel narrowing of cerebral arteries observed on imaging studies but without thunderclap headache. The etiology of RCVS remains elusive, although it has been linked to various triggers such as pregnancy, migraine, medications, procedures etc

RCVS is commonly mis-diagnosed and under-diagnosed, as it poses a diagnostic challenge due to its variable presentation and the potential overlap of symptoms with other neurological conditions. RCVS should be considered as one of the differential diagnoses in patients presenting with seizures especially if associated with triggers and angiographic evidence. Thunderclap headache may not be the presenting symptom in atypical cases.

40) DIAGNOSIS OF AORTIC STENOSIS USING ARTIFICIAL INTELLIGENCE: A SYSTEMATIC REVIEW AND META-ANALYSIS STUDY

Apurva Popat, MD; Param P. Sharma, MD, FACC, FHRS; Shereif Rezkalla, MD, FACP
Marshfield Clinic Program, Marshfield, WI

Background: Aortic stenosis (AS) is frequently identified at an advanced stage of the illness after clinical symptoms appear. The aim of this systematic review and meta-analysis is to evaluate the diagnostic accuracy of artificial intelligence (AI) algorithms in AS screening.

Methods: We conducted a comprehensive search of six databases. Various evaluation parameters, such as sensitivity, specificity, diagnostic odds ratio (DOR), negative likelihood ratio (NLR), positive likelihood ratio (PLR), and area under the curve (AUC) value were employed in the diagnostic meta-analysis of AI-based algorithms for AS screening.

Results: From 295 identified articles, 10 met our inclusion criteria. The pooled estimates of AI-based algorithms for the diagnosis of AS were 0.83 (95% CI: 0.81-0.85), 0.81 (95% CI: 0.79-0.84), 4.78 (95% CI: 3.12-7.32), 0.20 (95% CI: 0.13-0.28), 27.11 (95% CI: 14.40-51.05) for sensitivity, specificity, PLR, NLR, and DOR, respectively. Moreover, AUC value was 0.909 (95% CI: 0.889□0.929), suggesting outstanding diagnostic accuracy. Subgroup and meta-regression analyses identified geographical location (continent), type of AS, data source, and AI algorithm type as heterogeneity sources. Furthermore, we demonstrated proof of publication bias for DOR values analyzed using Egger's regression test (p=0.002) and a funnel plot.

Conclusion: Deep learning approaches offer highly sensitive, feasible, and scalable strategies to identify patients with moderate or severe AS.

41) THE EFFICACY OF ARTIFICIAL INTELLIGENCE IN THE DETECTION AND MANAGEMENT OF ATRIAL FIBRILLATION

Apurva Popat, MD; Jacob Obholz, DO; Elliot Hwang, MBBS
Marshfield Clinic Program, Marshfield, WI

Background: The application of AI in medicine is the culmination of decades of research, and its continued gain in popularity depends on the ability of researchers to synthesize and appraise existing and new evidence to support evidence-based practice. However, the applications of Artificial Intelligence (AI) in Atrial Fibrillation (AF) are yet to be comprehensively reviewed, critiqued and reported.

Objective: To comprehensively review the applications of AI in the detection and management of Atrial Fibrillation in literature.

Methods: This review was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations. Literature searches were done in PubMed and Google Scholar. The keywords used include artificial intelligence, deep learning, machine learning, artificial neural networks, and AF diagnosis. The JBI Critical Appraisal Checklist for Qualitative Research was employed to assess the methodological quality and risk of bias.

Results: The literature search yielded 109 studies, with 39 meeting the eligibility criteria. All the included studies were reviewed. 19 articles establish the utility of artificial intelligence and machine learning models in predicting AF risk. Twenty articles highlighted the utility of artificial intelligence in AF risk management. This systematic review identifies machine learning models as the main AI applications in AF risk stratification. AI-ECG models such as the optimal time-varying machine learning model and Observational Medical Outcomes Partnership Common Data Model outperform existing models such as Framingham, ARIC, CHADS2-VA2Sc and CHARGE-AF score both in sensitivity and specificity parameters. Furthermore, wearable devices such as a patch monitor and a smartwatch are both cost-effective and noninvasive alternatives to insertable cardiac monitors for continuous monitoring and patient-oriented AF risk management.

Conclusions: Machine learning has immense disruptive potential for AF prediction and management. However, the realization of this potential depends on systematically labelled data sets that are responsibly handled, standardization of research methods, and validation by prospective trials.

42) PERSPECTIVES ON POINT OF CARE ULTRASOUND IN INTERNAL MEDICINE RESIDENTS AND FACULTY

Ryan Powers, MD; Brandon Watson,MD; Aaron Byczynski, DO; Bailey Ray, MD
Medical College of Wisconsin Program, Milwaukee, WI

Point of care ultrasound (POCUS) is an increasingly common tool to address pointed clinical questions in real-time. The implementation of POCUS into graduate medical education, specifically in Internal Medicine training, has been varied. This heterogeneity is likely due to several factors, including availability of ultrasound equipment, amount of faculty with appropriate training, and perceived utility in its application. To further address the question of perceived utility, we surveyed Internal Medicine residents and faculty at an urban academic medical center in Milwaukee, WI without an established longitudinal POCUS curriculum. Surveyed residents consisted of PGY-1-3 Internal Medicine residents and PGY1-4 Combined Internal Medicine-Pediatric residents. Surveyed faculty had completed training in General Internal Medicine and several additional training in subspecialties. We found a consistent perceived utility in POCUS training and ultrasound equipment availability with 90% of surveyed residents and 90% of survey faculty believing that it improved the quality of patient care. There was also a predictable increase in comfort in implementation of POCUS in the clinical environment with increased level of training but peaked at only 43% of faculty reporting some level of comfort while only 15% of residents felt the same. Additionally, we surveyed perceptions of the impact that incorporating POCUS into the Internal Medicine residency curriculum would have. 90% of residents felt that it was an essential skill to learn during their training and 81% of faculty felt that POCUS incorporation would enhance the competitiveness and reputation of a program. This survey reveals a high level of interest in POCUS across all levels of training and suggests that Internal Medicine residency programs would benefit from a recruitment standpoint to incorporate POCUS training into their curriculum. We predict that the comfort in clinical implementation that is reflected here will increase as the availability of POCUS education and ultrasound equipment becomes more readily available.

43) WALKING BREATHLESS: A CASE OF PFO-ASSOCIATED PLATYPNEA-ORTHODEOXIA SYNDROME

Emily Schmitz, MD, MPH; Brandon Leding, MD; Bartho Caponi, MD, FACP
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Background: Platypnea-orthodeoxia syndrome (POS) is a rare clinical phenomenon characterized by dyspnea and arterial desaturation while in the sitting or standing position that is relieved in the recumbent position. Though multiple etiologies may cause it, the syndrome is most commonly associated with intracardiac or extracardiac shunt due to anatomic heart defects including atrial septal defect, atrial septal aneurysm, and patent foramen ovale. We present a case of platypnea-orthodeoxia syndrome in a patient with a moderate- sized patent foramen ovale.

Case: A 76-year-old female with hypertension, hypothyroidism and pilocytic astrocytoma status post left posterior fossa craniotomy was evaluated in the emergency department for shortness of breath. She reported chronic shortness of breath, but over the last 2 weeks symptoms worsened acutely. Previously worse only with exertion, she was newly dyspneic at rest. When asked about positional changes, she reported improvement when laying down and worsening when sitting up. Her exam was notable for a previously undocumented 2/6 holosystolic murmur that resolved with sitting and Valsalva. Her oxygen saturation was 95% while supine on 1L nasal cannula. Upon standing, her oxygen saturation decreased to 87%. Her initial emergency room evaluation was unrevealing including normal venous blood gasses and chest radiograph. CT angiogram of the chest was without evidence of pulmonary embolism or extracardiac shunt. She was admitted to the general medicine service and underwent a transthoracic echocardiogram with an agitated bubble study that revealed a new moderate sized patent foramen ovale compared to prior echocardiogram. She was diagnosed with platypnea-orthodeoxia syndrome due to intracardiac shunting from her PFO. A right heart cardiac catheterization showed a moderate size PFO with evidence of right to left cardiac shunt with Valsalva, not deemed clinically significant. A pulmonology evaluation was normal, including normal spirometry and gas transfer. Given her significant symptoms, she ultimately underwent PFO closure for management of her dyspnea.

Discussion: PFO-associated platypnea-orthodeoxia syndrome (POS) is an uncommon cause of positional dyspnea and requires careful attention to detail in history-taking. The differential for POS can be separated into two categories: intracardiac shunting and extracardiac shunting. Intracardiac shunting is more common and present in more than 80% of patients with POS. The pathophysiology is thought to involve increases in right atrial pressure and right to left shunting through an anatomical defect while in the upright position. However, the true physiologic mechanism of POS is likely more complicated given POS is a relatively rare condition and PFO has a prevalence in the general population of 25-30%. First step in diagnosis is transthoracic echocardiogram with agitated bubble study, however a thorough pulmonary and cardiac workup is crucial in ruling out other etiologies of shunting including parenchymal lung disease, pulmonary arteriovenous malformations and hepatopulmonary syndromes.

44) A RARE CASE OF DIABETIC MYONECROSIS IN A PATIENT WITH ACUTE, ATRAUMATIC THIGH PAIN

Samantha Shapiro, MD; Rebecca Aldridge, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Diabetic muscle infarction (myonecrosis) is a rare complication of poorly controlled diabetes, with equal preponderance in both Type 1 and Type 2 diabetes. Its prevalence is not entirely known, as most information from this condition has come from various published case reports. Like its prevalence, the exact pathogenesis of this condition is not entirely known, although it is thought to be due to vasculopathic changes due to poorly controlled diabetes. Indeed, the majority of patients with this condition also present with other microvascular sequelae of diabetes (e.g., retinopathy, nephropathy, neuropathy).

Case Description: A 55 year-old man with history of poorly-controlled Type 2 diabetes mellitus presented with one week of acute left thigh pain. Patient was previously seen in the ED for this symptom several days prior, with reassuring work-up and X-ray imaging negative for fracture at that time. He was discharged with pain medications, however re-presented after his dog jumped on his thigh, causing a subsequent increase in pain and new-onset associated swelling. Exam was notable for localized swelling and exquisite tenderness of the left vastus lateralis, with mild warmth to the touch and limited range of motion of the left hip and knee joint secondary to pain. Laboratory work-up was notable for A1c 12.9% with POC glucose of 347, leukocytosis to 12.4, elevated CRP 7.99 (normal ESR), and normal renal function. Ultrasound of the affected area showed abnormal appearance of the left thigh vastus lateralis muscle, consistent with significant muscular contusion/strain or myonecrosis/myositis. MRI showed loss of expected architecture striations over the left vastus lateralis, with relative paucity of internal flow. Ultimately, with low concern for necrotizing fasciitis, rheumatology and endocrinology were consulted, and the patient was deemed to have a typical presentation for diabetic muscle infarction. He was started on pain medications and anti-hyperglycemic medications, and had clinical improvement over the course of several days. He was subsequently discharged to short term rehab for ongoing physical therapy.

Discussion: Here, we present a rare case of diabetic muscle infarction in the absence of other known microvascular sequelae of diabetes. This patient presented with acute unilateral thigh pain, which is a classic presentation of diabetic myonecrosis. Although diabetic myonecrosis is a diagnosis of exclusion, with diabetes rates on the rise, it is important to keep this condition on the differential for those patients with poorly controlled diabetes who present with atypical muscle pain (particularly unilateral thigh pain), and with imaging findings non-concerning for necrotizing fasciitis. In those patients who meet this presentation, it may be prudent to hold off on diagnostic biopsy, as biopsy of diabetic myonecrosis can significantly prolong recovery time and cause delayed healing – likely due to pre-existing microvascular infarcts in the affected area. For those individuals for whom there is a high suspicion of diabetic muscle infarction, the best course of action is glycemic control, physical therapy, and watchful waiting. That said, even with adequate glycemic control and functional improvement with physical therapy, patient should be advised that there is a high risk of recurrence.

45) A CASE OF OCCULT PROSTATE CANCER WITH UNUSUAL PRESENTATION OF BICYTOPENIA AND HYPOXIA, WITH ISOLATED METASTASIS TO THE BONE MARROW AND INITIAL CONCERN FOR POSSIBLE MICROSCOPIC TUMOR EMBOLIZATION

Samantha Shapiro, MD; Alexandra Wick, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Prostate cancer is one of the most common male cancers in the United States, with about 1 in 8 men being diagnosed with this disease in their lifetime. Presentations of prostate cancer are variable, and symptoms can vary even more when the prostate cancer is metastatic. Prostate cancer can metastasize broadly, but often metastasizes to the bones, lymph nodes, or intra-abdominal organs. One potential metastatic complication is microscopic tumor embolization (PTE) – an exceedingly rare complication of metastatic prostate cancer in which small tumor emboli spread and ultimately seed the vasculature of the lungs. PTE is a diagnosis of exclusion, and ultimately can only be diagnosed via tissue biopsy.

Case Description: A 75 year-old man with history of ILD/IPF, COPD, elevated PSA, and iron deficiency anemia presented as a direct admit from pulmonary clinic for acute on chronic dyspnea and hypoxia over the past six months. Following admission to the hospital, labs were obtained and notable for Hgb 9.7 (down from 13.8 six months prior) and platelet level of 77k. Broad anemia work-up was obtained and notable for elevated ferritin and LDH, with otherwise normal iron studies. Following these studies, bone marrow biopsy was obtained and showed hypercellular marrow extensively involved by metastatic carcinoma, consistent with prostate primary; PSA was subsequently checked and markedly elevated. Interestingly, there was no prostate enlargement, and no evidence of metastasis on skeletal survey or on CT imaging of the abdomen/pelvis. Due to the patient's history of pulmonary disease, a right heart catheterization was obtained and notable for severe pulmonary hypertension with normal PCWP and right atrial pressures. Pulmonology was consulted and thought that the patient's acutely worsening hypoxia could be explain by microscopic tumor emboli from his prostate cancer, however cytology on pulmonary capillary blood was negative for malignancy, suggesting that the patient's cancer was metastatic only to the bone marrow. The patient was started on Degarelix, with subsequent improvement in both bicytopenia and hypoxia, and was ultimately discharged home on portable HFNC. Unfortunately, the patient's hypoxia worsened following discharge, and he was re-admitted and subsequently passed away in the ICU. Limited post-mortem autopsy was obtained and was negative for PTE or for any other metastasis apart from to the bone marrow.

Discussion: Here, we present a case of prostate cancer with metastasis to the bone marrow, and with associated bicytopenia and hypoxia that improved following initiation of Degarelix treatment, initially concerning for microscopic tumor embolization (PTE). Ultimately, pathology was obtained and was without evidence of PTE, however did show isolated metastasis to the bone marrow. Isolated bone marrow metastasis is uncommon, as prostate cancer bone marrow metastasis is typically a process that occurs late in the course of metastatic disease. Ultimately, given the variable presentations of both local and metastatic prostate cancer, up to date cancer screening in individuals with risk factors for prostate cancer or elevated PSA levels is of the utmost importance, and can ultimately help to identify cases of prostate cancer before they advance to the point of metastasis.

46) HASHIMOTO'S ENCEPHALOPATHY IN A YOUNG ADULT: CASE REPORT

Dalia Sriwi, MBBS; Zahraa Qamhieh, MMS; Jon Arnason, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

This is a case of an otherwise healthy 23-year-old male who presents with 4 months of recurrent seizures and residual neurological symptoms, such as short-term memory loss. He required intubation because of his most recent seizure and was difficult to extubate. He continued to experience visual hallucinations and exhibited abnormal executive function despite resolution of seizures and was empirically treated with pulse steroids. Physical exam, age-appropriate cancer screening and infectious workup were largely unremarkable. Other labs were significant for mildly elevated ESR (33 mm/hr), normal CRP (0.3 mg/L), normal TSH (2.16 mIU/mL), and elevated protein (92 mg/dL) in CSF. A cytokine panel of his CSF was also sent and showed elevated IL-6 and IL-8. Patient showed significant improvement after pulse steroids with return to baseline executive function and was discharged on a steroid taper. Given his rapid improvement with steroids and family history of thyroid disease, antithyroglobulin antibodies were sent and were found to be high (148.7 IU/mL) shortly after discharge. Hashimoto's encephalopathy (HE) or "steroid-responsive encephalopathy associated with autoimmune thyroiditis" (SREAT) is an underrecognized and undertreated syndrome characterized by altered mental status, hallucinations, and seizures. Pathophysiology is currently unknown, although there are many proposed mechanisms. HE is usually a diagnosis of exclusion, although high titers of anti-thyroid antibodies are helpful to make the diagnosis. There has been no clear correlation between levels of anti-thyroid antibodies and overt clinical manifestations. This patient was also euthyroid on presentation, making the diagnosis more challenging. Treatment is usually with pulse-steroids as first line and immunosuppressive drugs if no response. There is some literature demonstrating use of thyroxine or antithyroid drugs to maintain a euthyroid state. Prognosis is usually good, and 40% of patients remain disease-free after steroid taper. In conclusion, there needs to be a high-suspicion index for Hashimoto's encephalopathy as early detection and treatment lead to improved outcomes and quick resolution of symptoms.

47) WANDERING ACCESSORY SPLEEN: A DIAGNOSTIC CHALLENGE

Liz Thaliath, MD; Joseph Edmund, MD
Marshfield Clinic Program, Marshfield, WI

Introduction: The spleen connects to the back of the stomach through the gastrosplenic ligament and to the pancreatic tail and left kidney via the splenorenal ligament, which also carries the splenic arterial and venous branches. Wandering spleen, a rare occurrence with an incidence of less than 0.2%, refers to the spleen shifting from its normal location to a lower position in the abdomen due to weakened or underdeveloped supporting ligaments. An accessory spleen is a congenital focus or ectopic mass of healthy splenic tissue found separate from the main body of the spleen, present in 10–15% of the general population. While some cases may be incidental findings in asymptomatic individuals, others might manifest as mild abdominal discomfort or intermittent vague pain, often attributed to splenic congestion or, in rare instances, torsion and detorsion of the splenic pedicle. Herein, we present a case of an accessory wandering spleen.

Case: 60-year-old female initially presented with shortness of breath. CT scan of the chest revealed a 4 cm round enhancing mass in the left upper quadrant (LUQ), suspicious for neoplasm. PET scan was performed for further evaluation, which did not show dramatic elevation of FDG activity accumulating in the mass. Differential diagnoses at that time included lymphoma, gastrointestinal stromal tumor (GIST), or accessory spleen. Due to a high suspicion for accessory spleen, a technetium 99m sulfur colloid scan was conducted. The scan revealed that the mass was in a different location, near the gastrohepatic region adjacent to the left lobe of the liver, suggesting mobility. The mass exhibited moderate sulfur colloid activity, indicative of a large splenule. Considering the mobility, this likely represented a wandering splenule. As the patient remained asymptomatic, shared decision-making led to opting for surveillance with repeat imaging rather than surgical intervention. A follow-up CT scan after 6 months showed a normal-sized spleen located in the LUQ along with a LUQ mass adjacent to the greater curvature of the stomach. Correlating with previous studies, including CT of the chest, PET/CT, and technetium sulfur colloid nuclear scan, this mass was mobile and found in different locations on each study, consistent with an accessory wandering spleen.

Discussion: The embryological development of the spleen occurs from mesenchymal cells migrating to the dorsal mesogastrium. Incomplete fusion of splenic tissue during the fifth week of fetal life gives rise to the formation of an accessory spleen, most often encountered near the splenic hilum. Torsion of an accessory spleen is uncommon and constitutes the surgical indication in about 0.2–0.3% of splenectomies. Conservative treatment without emergent surgery is reasonable for asymptomatic patients. It is crucial to differentiate an accessory spleen from conditions that can mimic its presentation, including lymphomas, GISTs, and other neoplasms depending on their location. A comprehensive understanding of this pathology and familiarity with its radiological features are essential for accurately diagnosing and managing this complex condition.

48) LONG-ACTING OCTREOTIDE AN EFFECTIVE THERAPY FOR RECURRENT GASTROINTESTINAL ANGIODYSPLASIA BLEEDING

Liz Thaliath, MD; Kanza Mazhar, MD; Nicole Krolak, MD
Marshfield Clinic Program, Marshfield, WI

INTRODUCTION: Gastrointestinal angiodysplasias (GIADs) are vascular anomalies resulting from tortuous, dilated small blood vessels. The spectrum of clinical signs ranges from acute, recurrent bleeding to chronic anemia, which leads to frequent hospitalizations and transfusions. Approximately 6% of lower gastrointestinal (GI) bleeds are attributed to GIADs. Bleeding often occurs when GIADs are combined with the use of anticoagulants. Managing the risk of bleeding in patients with GIADs who also require anticoagulation for other diagnoses presents a significant challenge.

CASE: 78-year-old male on chronic anticoagulation presented with recurrent, intractable hematochezia. Past workup for GI bleeding included a negative esophagogastroduodenoscopy (EGD) in 2020, colonoscopy in 2020 significant for angiodysplasia in the ascending colon treated with argon plasma coagulation, inconclusive colonoscopy in 2022. In March 2024, he presented with hematochezia and blood loss anemia. Workup, including EGD, colonoscopy, and PillCam endoscopy, failed to identify the source of the bleed. Two weeks later, he returned with similar symptoms. On Day 2 of admission, tagged red blood cell (RBC) scan showed diffuse activity near the hepatic flexure. Day 3, EGD was negative, colonoscopy demonstrated blood in the ascending colon, but no definite bleeding site was identified. Days 4, CT angiography (CTA) abdomen failed to identify the source of bleed. Repeat CTA on Day 5 was inconclusive again. Day 6, a repeat tagged RBC scan showed active GI bleeding near the right hepatic flexure. Visceral angiography identified an angiodysplasia in the ascending colon, and coil embolization of the segmental branch of the right colic artery was performed. However, he continued to have transfusion-dependent anemia along with hematochezia. On Days 9 and 10, he had multiple episodes of melena with inconclusive EGD and push enteroscopy on Day 11. After receiving 10 units of packed RBCs by Day 10, octreotide 50 mcg subcutaneous twice daily was started for the treatment of refractory, transfusion-dependent GIADs, failing first-line treatment. Owing to compliance concerns, he was switched to long-acting release octreotide (LAR-OCT), with the first dose administered on Day 19. Follow-ups on Days 28 and 43 showed stable hemoglobin levels without further GI bleeds.

DISCUSSION: First-line treatments for GIADs include angiographic embolization, endoscopic ablations, and surgical resection. However, these approaches are often unsuitable due to the inaccessibility or multiplicity of lesions. Furthermore, even when feasible, their efficacy is limited, with a considerable rebleeding rate of 34%. In cases of persistent bleeding, repeated RBC transfusions are often the only option for a significant number of patients. This transfusion dependency is associated with frequent hospitalizations and substantial healthcare costs. Therefore, somatostatin analogues such as octreotide are appealing, but the necessity for twice-daily subcutaneous administrations poses a significant limitation. LAR-OCT offers a potential solution, with studies showing significant reduction in transfusion requirements, rebleeding rates, and healthcare utilization, including endoscopic procedures, in patients with refractory bleeding from GIADs. Additionally, mean hemoglobin levels showed remarkable improvement, and the once-monthly dosing schedule was associated with increased compliance. Therefore, LAR-OCT should be considered for the treatment of refractory bleeding due to GIADs when endoscopic treatment is insufficient or unfeasible.

49) UVEITIS MASQUERADE: A CASE OF PRIMARY VITREORETINAL LYMPHOMA

Bradley Uyemura, MD; Julie Chang, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Introduction: Primary vitreoretinal lymphoma (PVRL) is a subset of primary central nervous system (CNS) lymphoma where neoplastic lymphocytes arise from the vitreous and/or retina. It is an exceptionally rare disease, with an estimated incidence of 0.047 cases per 100,000 people per year. Because of this, PVRL is challenging to diagnose and lacks standardized treatment.

Case description: A 71-year-old male with a medical history of well-controlled ulcerative colitis on mesalamine presented to his primary care clinic with bilateral visual floaters. Due to the pandemic, he was directed to an ophthalmology clinic ten months later and was presumed to have uveitis given his history of ulcerative colitis. He was empirically treated with steroid eye drops with partial improvement. However, his floaters persisted despite escalating treatments with episcleral triamcinolone injections and oral prednisone. After six months of unsuccessful treatments, he underwent a diagnostic vitrectomy that demonstrated a high-grade non-Hodgkin B-cell lymphoma with immunophenotypes resembling a diffuse large B-cell lymphoma. Initial staging via a CT/PET study and lumbar puncture did not show any extraocular involvement, consistent with a diagnosis of PVRL. He received induction therapy with intravenous (IV) methotrexate 8 g/m2 (2 doses, 28-day cycles), IV rituximab 375 mg/m2 (6 doses, 7-day cycles), and oral temozolomide 150 mg/m2 (days 7-11). He also received intra-ocular methotrexate 0.04 mg/0.1 mL and intra-ocular rituximab (4 doses, 7-day cycles, then continued monthly for 6 additional doses), followed by consolidative therapy with IV cytarabine 1.5 g/m2 and IV etoposide 5 mg/kg for 4 days. Following consolidation therapy, his floaters had resolved and he was surveilled with brain MRI's. Unfortunately, his twenty-fourth-month MRI demonstrated new angiocentric enhancement of the right basal ganglia, splenium, and left cerebellum – just one month after he developed idiopathic vertigo. Another lumbar puncture yielded monoclonal lambda-restricted B-cells, similar to his previous lymphoma. He received IV rituximab 375 mg/m2, IV methotrexate 3.5 g/m2, and IV carmustine 100 mg/m2. His post-treatment MRI showed a partial response with residual disease in the right basal ganglia and splenium. He is currently pursuing enrollment in a chimeric antigen receptor (CAR) T-cell clinical trial.

Discussion: PVRL can mimic uveitis by presenting with blurred vision and floaters, with a median time to diagnosis of 6 months. As seen in this patient, diagnosis was also delayed by his temporary symptom improvement with empiric steroids. But even with a rapid diagnosis, there is no consensus for optimal therapy. While several studies report efficacy of intravitreal methotrexate and rituximab without systemic immunochemotherapy there are data to suggest no differences in mortality between intravitreal versus systemic therapy. Others have investigated approaches including radiation and autologous stem cell transplantation with mixed outcomes. Likely due to a combination of delayed diagnoses, heterogeneity in disease biology, and suboptimal therapies, 56-90% of patients with PVRL have concurrent or relapsing CNS disease during their course. Overall, awareness of this masquerade syndrome is critical in patients suspected of having uveitis without a durable response to steroids. Further studies are needed to determine the most effective treatments for this highly morbid condition.

50) IMPORTANCE OF POINT-OF-CARE ULTRASOUND (POCUS) IN DETECTING INFECTIVE ENDOCARDITIS WITH UNUSUAL PRESENTATIONS

Samyukta Varma, MD; Ahmad Basharat, MD; Ateeq Ur Rehman, MD
Marshfield Clinic Program, Marshfield, WI

Introduction: Point-of-Care-Ultrasound (POCUS) offers immediate diagnostic insights at the patient's bedside. POCUS can serve as a tool for identifying a myriad of pathologies, including the timely detection of infective endocarditis. Our case exemplifies the vital role of POCUS in Internal Medicine residency, focusing on its capability to expedite the diagnosis of infective endocarditis, thereby facilitating prompt treatment initiation.

Case description: The patient is a 60-year-old male who arrived in the emergency department reporting an unusual symptom. He stated that his heart rate was in the 80s as shown by his watch since that morning, whereas his resting heart rate usually hovered around the 50s. This was his only concern, and he denied any other symptoms such as chest pain, palpitations, shortness of breath, fever, chills, nausea or vomiting. In the ER, labs revealed normal CBC and inflammatory markers, with a mild elevation of troponin level ensuing further investigations. Patient was admitted to teaching service. The Internal Medicine team performed a bedside Point-of-Care-Ultrasound (POCUS), which revealed a mitral valve vegetation indicative of infective endocarditis. Subsequent blood cultures confirmed the diagnosis with five out of five cultures growing Staphylococcus epidermidis. Echocardiography including TEE was done which showed a mitral valve abscess accompanied by a severe regurgitation. This prompted immediate consultation to cardiovascular surgery for consideration of mitral valve replacement.

Case discussion and conclusion: POCUS has been widely utilized particularly in the past decade for aiding in diagnosis as well as for performing invasive procedures. In our patient, despite having an unusual presentation of a heart rate elevated to 80s, a team of Internal Medicine residents relied on their clinical acumen and promptly utilized POCUS to assess for potential cardiac involvement.

Our case highlights the role of POCUS as a rapid and effective diagnostic tool, allowing the detection of subtle cardiac abnormalities even in atypical clinical presentations. This focuses the importance of integration of POCUS into internal medicine residency curriculum with training of the residents for its comprehensive practice.

51) A CURIOUS CASE OF RAPIDLY PROGRESSIVE ASCENDING MIXED SENSORY AND MOTOR NEUROPATHY

Divya Vundamati, MD; Christine Sharkey, MD
University of Wisconsin Hospitals and Clinics Program, Madison, WI

Case: We describe a rare instance of a patient's illness manifesting in the absence of prior lupus history. Our 59 yo M with psoriasis on Humira, ITP s/p splenectomy on eltrombopag presented with severe progressive neuropathy in a glove and stocking distribution ascending from his lower to upper extremities rendering the patient paralyzed after ten days of fevers and shortness of breath concerning for multifocal pneumonia. He was treated with IV antibiotics although he continued to spike fevers. Labs showed leukocytosis, thrombocytopenia, hypocomplementemia, ANCA >1:2560 homogenous pattern, positive chromatin, positive anti-smooth AB, positive anti-mitochondrial AB, p-ANCA 1:640 with negative MPO but positive PR3, positive beta 2 glycoprotein, and positive cardiolipin AB. DS-DNA antibody, Jo1, RNP, SM/RNP, smith, SCLE 70, anticentromere, and SSA/SSB were negative. On exam, he had decreased sensation from feet to mid-calves bilaterally and from hands to wrists bilaterally along with 2/5 strength in his bilateral upper and lower extremities. EMG showed demyelinating features. Biopsy of the sural nerve and muscle showed medium vessel vasculitis. His presentation was thought to be SLE vasculitis manifested with + ANA, APLS labs, thrombocytopenia, hypocomplementemia, and serositis. He was treated with cyclophosphamide, hydroxychloroquine, and IV methylprednisolone which he tolerated well.

Conclusion: Lupus vasculitis is not the most common manifestation of SLE but can lead to serious morbidity and mortality. It predominantly involves small sized vessels although medium sized vessels can also be affected. Peripheral neuropathy has been reported in 3.43% of patients with SLE and the pathogenesis is not well understood. Peripheral nervous system SLE may be the only manifestation of a lupus flare (45.2% of cases) and is associated to high disease activity by SLEDAI. Electrophysiological testing will reveal axonal damage or demyelination as seen in this case. Treatment is largely based on case reports due to lack of therapeutic randomized trials. Typically, in lupus patients with organ threatening disease our treatment includes prednisone with induction therapy of cyclophosphamide, rituximab and maintenance of azathioprine, mycophenolate mofetil, and hydroxychloroquine.

52) MUSCULOSKELETAL COMPLICATIONS OF PASTEURELLA BACTEREMIA

Claudia Waters, MD; Sobiah Khan, DO; Ahmed Zahid, MD
Marshfield Clinic Program, Marshfield, WI

Pasteurella multocida is a commensal organism found in domestic cats and dogs. Inoculation via bites or scratches often lead to skin and soft tissue infections. Rarely, small inoculums can lead to bacteremia, shock, and seeding of distal sites.

A 66-year-old woman with cirrhosis presented with fever and low back pain 3 days after sustaining a bite from a cat on her left leg. She was in septic shock requiring vasopressor support. There were cellulitic changes of the left leg and blood cultures grew Pasteurella multocida. Echocardiogram showed no valvular lesions. Prompt MRI of the lumbar spine showed no acute findings. Her hemodynamic status improved with IV antibiotic therapy and fluid resuscitation; she was weaned off vasopressors on day 2 of hospitalization. Despite this, her back pain progressed, and she developed pain, erythema, and edema of the left wrist. MRI of the left wrist was consistent with septic arthritis. She underwent left wrist joint aspiration and subsequent incision and drainage; fluid aspirate and intraoperative cultures both grew Pasteurella.

On day 7 of hospitalization, the patient continued to have severe low back pain. Repeat MRI of the lumbar spine demonstrated infectious discitis–osteomyelitis at L2-3 level, multiple small intramuscular abscesses and myositis of the left psoas, and septic arthritis of the right L5-S1 facet joint. With continued IV antibiotics and intensive physical therapy, the patient achieved reasonable pain control and was discharged to an inpatient rehab facility 17 days after admission.

This case demonstrates the widespread complications of Pasteurella bacteremia that were not evident at presentation. Repeat MRI imaging, though costly, proved essential in diagnosing multiple infectious processes that were below the level of MRI sensitivity early in the course of disease. Recognizing the limitations of early imaging is vital when patients do not improve as expected based on initial radiologic findings.

53) DIFFERENCES IN OUTCOMES IN NON-SMALL CELL LUNG CANCER PATIENTS TREATED WITH TYROSINE KINASE INHIBITORS

Andrew Wellen, MD; Jonathan Thompson, MD
Medical College of Wisconsin Program, Milwaukee, WI

With advancements in molecular sequencing, targeted therapies are increasingly becoming part of the standard-of-care treatment in various malignancies. Tyrosine kinase inhibitors (TKIs) are one such therapy. We examined 98 patients diagnosed with non-small cell lung cancer (NSCLC) who received treatment with a TKI targeting a specific driver mutation between September 1, 2012, and April 13, 2024. Of these patients, 60 had epidermal growth factor receptor (EGFR) gene mutations, and 38 had other actionable driver mutations. Patients were retrospectively followed from date of TKI initiation to date of disease progression, date of initiation of next-line therapy, and, where applicable, date of death, making note of initial response to TKI treatment utilizing RECIST version 1.1. No radiographic complete responses (CRs) were reported, but 59% of patients had partial response (PR) to TKI, 23% had stable disease (SD), and 16% had progressive disease (PD). Response rates by mutation status included PR in 65% of EGFR-mutated patients versus 50% in other driver-mutated patients, SD in 22% versus 26%, and PD in 13% versus 21%, respectively. Despite higher rates of initial PR, 77% of EGFR patients had radiographic evidence of disease progression throughout the study period compared to 66% of non-EGFR patients. Of the EGFR-mutated patients who experienced cancer progression, 83% of cases involved a new metastatic site, whereas in the non-EGFR group, 96% of progressive cases involved new sites. Conversely, 46% of EGFR patients who had disease progression had progression involving the primary cancer site compared to 20% of non-EGFR patients. For the entire patient population, the average progression-free survival while on first-line TKI was 24.8 months (26.2 months for EGFR-mutated and 22.5 months for non-EGFR-mutated). The average length of time on first-line TKI was 29 months (32 months for EGFR-mutated and 24.1 months for non-EGFR-mutated). This difference suggests that patients had an average tendency to remain on first-line TKI therapy even after disease progression, perhaps explained by a relatively large number of patients, 26, receiving local treatment (radiation or surgery) at site of progression while remaining on first-line TKI. A discrepancy in radiographic progression and clinically significant progression necessitating change in therapy could play a role as well. The overall average survival for the entire population was 43.2 months (45.3 months for EGFR-mutated and 39.8 months for non-EGFR-mutated). These data suggest progression at the lung primary occurs frequently in EGFR-mutated patients on TKI, whereas progression with new distant metastases was nearly universal in non-EGFR-mutated patients. These data warrant further investigation with an expanded data set to allow formal statistical analyses to occur to associate distinct patterns of progression with specific driver mutations in NSCLC. Understanding patterns of progression can help guide treatment strategies. For instance, if the primary lung tumor is established as a strong driver of TKI progression in EGFR-mutated NSCLC, early radiation to the lung primary prior to TKI progression may be a valuable strategy to delay progression. Data abstraction on a larger group of driver-mutated NSCLC patients is currently underway and will be reported at a later date.

54) GEMELLA SPECIES ENDOCARDITIS IN HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY

Aileen Xu, MD; Taha Kothari, BS; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin Program, Milwaukee, WI

Introduction: Gemella bergeri is a facultative anaerobic, catalase negative, Gram-positive cocci, part of the normal human oral, digestive, and urinary tract flora. It was first isolated in 1998 from the blood cultures of six febrile patients, three of whom were diagnosed with subacute bacterial endocarditis. Since then, other cases of endocarditis related to Gemella have been reported but remain rare. Risk factors for developing endocarditis from Gemella may include male gender, congenital heart disease, valvular abnormalities, bowel surgery, and oral infections.

Case: A 49-year-old female with hypertrophic obstructive cardiomyopathy (HOCM), prominent systolic anterior motion (SAM) of the mitral valve with associated mitral regurgitation (MR), and no substance use history presented to the emergency department with 2 weeks of fatigue and worsening dyspnea on exertion. She was found to have fever, tachycardia, tachypnea, and leukocytosis, all clinically consistent with sepsis. On initial assessment, no obvious source for infection was noted, though she did have numerous dental caries. The patient's symptoms improved significantly with broad-spectrum antibiotics and fluids. 3 days later, blood cultures grew Gemella bergeri. A transthoracic echocardiogram (TTE) was notable for mitral regurgitation secondary to SAM of the mitral valve leaflets, which was more prominent than what was seen on a TTE done prior to admission. Clinical suspicion for endocarditis remained high despite no official diagnosis stated in the TTE report. Subsequent trans-esophageal echocardiogram (TEE) showed masses attached to the anterior and posterior mitral valve leaflets, and a perforation of the posterior valve, all consistent with endocarditis. The patient underwent mitral valve replacement with a mechanical valve and was discharged on 6 weeks of antibiotics, with complete resolution of symptoms.

Discussion: Here we report a case of endocarditis related to the Gemella species in a patient with HOCM. Though the patient was known to have prominent SAM and associated MR, she had no other known valvular abnormalities or significant risk factors for endocarditis. It is plausible that the anterior motion of the mitral valve and associated mitral regurgitation provided the valvular endothelial injury that encouraged a nidus for infection. In this patient's case, blood cultures were positive for Gemella bergeri, a species often difficult to grow, which prompted higher suspicion for valvular seeding and a more thorough investigation into infectious sources. This case highlights that considerations for formal evaluation for endocarditis should be made for patients with HOCM and known SAM presenting with sepsis without a clear source. It also demonstrates the value of pursuing a TEE if clinical suspicion for endocarditis is still high after a TTE.

Medical Student Posters

1) INFLUENCE OF SCHOLARLY PROJECTS ON RESIDENCY APPLICATION OUTCOMES AMIDST TRANSITION TO PASS/FAIL GRADING FOR USMLE STEP 1

Salma A. Sheriff, BS; Mohamed T. Abdelrahim, MA; Pinky Jha, MD, MPH, FACP

Medical College of Wisconsin, Milwaukee, WI

Background: Scholarship during medical school has been recognized as a crucial factor residency program directors consider when evaluating medical students' applications, influencing success in residency matching. The change in score reporting for the USMLE STEP 1 exam in January 2022 was expected to further increase the weight of other aspects of residency applications, like research scholarship, in achieving a match. This pressure could exacerbate trends seen in the past 15 years of greatly increased research productivity by medical students, with a focus primarily on volume rather than significance of publications. This project aims to assess the significance of scholarly work on residency application outcomes and determine whether students perceive the recent change in score reporting for the USMLE as enhancing the holistic assessment of their accomplishments during medical school, thereby influencing their ability to secure their desired residency program.

Methods: A Qualtrics survey was conducted among M4 students at the Medical College of Wisconsin (MCW). This IRB approved study aimed to understand the perception of M4 students about the role of scholarly projects in securing residency positions. Quantitative data were analyzed using descriptive statistics and Fischer-tests to examine whether the respondents matched into their first preferred residency spots. All analyses were done using R version 4.1.2. P-value <0.05 was considered statistically significant. Additionally, the survey included an open-ended section for free-text commentary, which was reviewed to identify common themes.

Results: A total of 187 M4 students were surveyed, with 59 students completing the survey (response rate over 30%). Of these respondents, 93% (N=55) successfully matched. Among the matched students, 56% (N=31) matched into their first-choice residency program. The top matched specialties included internal medicine (22%, N=12), anesthesiology (11%, N=6), and psychiatry (11%, N=6). In comparing responses by students who matched into their first-choice program and those who did not revealed that the number of publications and the proportion of interviews where students were asked about their scholarly projects were statistically insignificant (P=0.85 for both). However, a majority of respondents (63%, N=30) believed that presenting and/or publishing their scholarly work was significantly or extremely helpful in matching into their desired residency.

Free-text responses by students varied greatly; respondents differed on the relative importance of quantity versus quality, though many emphasized the importance of focusing on projects students are truly passionate about. Common advice included recognizing the specialty-specific importance of scholarly work and to "start early", by finding research mentorship and projects in the M1 year.

Conclusion: This survey-based study highlights the perceived advantages of scholarly work in securing desired residency programs. The findings also emphasize the need for early focus on high quality research projects that aligned with the students' interest.

References:

Brian Elliott, J. Bryan Carmody; Publish or Perish: The Research Arms Race in Residency Selection. J Grad Med Educ 1 October 2023; 15 (5): 524–527. doi: https://doi.org/10.4300/JGME-D-23-00262.1

2) EVALUATING THE IMPACT OF STRUCTURED ONBOARDING PROGRAMS IN HOSPITAL MEDICINE

Mohamed Abdelrahim; Salma A. Sheriff, BS; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Background: Effective faculty onboarding is critical for providing outstanding patient care, strong education, and significant career advancement. A well-planned, managed, and executed onboarding program is intrinsically beneficial because it assures new employees that they are in a supportive workplace. Such programs foster camaraderie, make new personnel feel included in the organization, and reduce burnout and turnover. To create a systematic onboarding program at Froedtert & the Medical College of Wisconsin (MCW), we conducted a needs assessment survey to gather information and identify areas for improvement.

Methods: A survey was conducted among 58 respondents, including faculty and Advanced Practice Providers (APPs) at the Froedtert & MCW to evaluate the perceived benefits and effectiveness of structured onboarding programs in hospital medicine. The survey included various questions about the onboarding process. Respondents rated their agreement with statements regarding the benefits of onboarding. An open-ended section for free-text commentary allowed respondents to provide recommendations for improving these programs.

Results: Of the 58 responders (N=58), 62% (n=36) were faculty, and 38% (n=22) were APPs. Respondents ranged in experience from less than a year to more than six years. This wide range of experience levels gave a thorough understanding of how the onboarding process affected various phases of professional development. Most participants acknowledged the advantages of onboarding initiatives. In particulat, 74% strongly agreed and 21% somewhat agreed that they had witnessed the advantages of onboarding prior to beginning their professions.

Of the possible advantages of onboarding mentioned, 69% of respondents agreed that onboarding increases productivity, efficiency, and confidence. Moreover, 22% cited improved professional growth chances as a major advantage, and 30% strongly agreed that onboarding helped them better navigate day-to-day patient care. In free-response answers, respondents emphasized the importance of onboarding in building connections with peers and resources, feeling welcomed, decreasing stress and burnout.

The participants offered multiple recommendations aimed at augmenting the onboarding process, recommending that onboarding schedules activities should be finalized and shared well in advance to lower anxiety and enhance preparation. A phased approach to onboarding was also suggested, where initial phases focus on immediate operational needs, followed by later phases addressing long-term goals and career advancement. Among the respondents, 52 continued to reflect on different possible sessions to be included in onboarding programs. Respondents believed it would be most helpful to collaborate with the care team, with 65% strongly agreeing and 98% agreeing overall. Similarly, 60% strongly agreed and 96% agreed that implementing a peer buddy system would be beneficial. Respondents were most split on whether shadowing would be beneficial, with 14% feeling neutral or disagreeing that shadowing would be helpful during onboarding.

Conclusion: The survey results highlight the profound advantages of structured onboarding programs in hospital medicine. Respondents noted several crucial benefits, including enhanced efficiency, confidence, and productivity, as well as smoother navigation of patient care and more opportunities for career advancement. The feedback provides actionable insights for establishing and improving onboarding programs to better support new hires and promote long-term success in hospital medicine.

3) PRACTICING STRUCTURAL COMPETENCY AND CULTURAL HUMILITY IN THE CARE OF MUSLIM PATIENTS

Nawara Abufares; Saba Anwer; Buruj Mohammed
Medical College of Wisconsin, Milwaukee, WI

INTRODUCTION: For Muslim Americans, perceived discrimination and lack of provider awareness of Islamic social norms, cultural sensitivities, and barriers to care can strain the physician-patient relationship, contributing to poor patient compliance. Our curriculum intervention addresses this gap in medical education at the Medical College of Wisconsin through a multi-modal workshop that integrates structural competency and cultural humility skills related to caring for Muslim patients.

METHODS: Our workshop incorporated didactics with a simulated case of a Muslim woman's experience in the Emergency Department. The first part of our workshop focused on providing baseline knowledge of Islamic beliefs that influence healthcare decisions. Then, in small groups, students read and discussed the case accompanied by a facilitator. Pre- and post-session surveys were distributed to measure participants' comfort in caring for Muslim patients.

RESULTS: Twenty-nine students participated in this pilot curriculum. Participants scored significantly higher on all post-test questions compared to pretest questions including comfort in providing culturally sensitive care ($p < 0.001$), awareness of barriers to care ($p < 0.001$), the Muslim patient experience ($p < 0.001$), religious beliefs ($p < 0.001$), cultural preferences ($p < 0.001$), and comfort in incorporating cultural preferences into care ($p < 0.001$). Students' feedback was positive overall, with many emphasizing the need for cultural humility and structural competency education in the core curriculum.

DISCUSSION: This curriculum addressed the need to provide students with a baseline awareness of Muslim practices that influence healthcare and cultural competency skills to improve their comfort when caring for patients from different cultural and religious backgrounds as they transition into roles on their clerkships as well in inpatient and out patient scenarios. We recommend this curriculum for healthcare providers preparing to care for diverse patients in the US.

4) EVANS SYNDROME: AN UNUSUAL CASE OF THROMBOCYTOPENIA

Alexandra Ahrens; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Introduction: Evans Syndrome (ES) is a rare autoimmune disorder characterized as the concurrent or sequential occurrence of warm autoimmune hemolytic anemia (wAIHA) and immune thrombocytopenia (ITP) and/or immune neutropenia. Given the rarity of ES (annual incidence 1.8/million person-years), there are limited clinical studies around treatment modalities. Here we present this case to increase awareness among clinicians to consider this diagnosis in patients presenting with thrombocytopenia.

Case Description: A 24-year-old Caucasian female with a family history of multiple autoimmune disorders presented to the Emergency Department with 3 weeks of bruising, petechiae, epistaxis, and fatigue. Admission workup revealed Hemoglobin (Hgb) 7.6, platelets (PLT) <3,000, and elevated MCV (102.1). Further labs showed elevated LDH (415), indirect bilirubinemia, elevated reticulocyte count (9.9%), and haptoglobin<10, indicating hemolysis. Positive DAT C3 and IgG identified wAIHA. Fibrinogen and INR were normal, and D-dimer (265) was elevated. Peripheral blood smear showed macrocytic anemia with blast cells. Hematology was consulted, and patient received methylprednisone 125 mg and three units of platelets. PLT increased (16,000) but dropped the next day. She received another unit of platelets without change. Further transfusions were held for platelets and PRBC, unless clinically indicated, given lack of therapeutic impact.

Extensive hemolysis and thrombocytopenia workup was unrevealing. With a clinical presentation of easy bruising and petechiae and lab work showing wAIHA and ITP, the patient was diagnosed with Evans syndrome. ANA, ADAMST13, HIV, Hepatitis, B12, B9, peripheral smear, and flow cytometry ruled out infectious, autoimmune, and lymphoproliferative processes.

Prednisone 100 mg was initiated. She remained asymptomatic without evidence of bleeding or bruising and labs demonstrating stable Hgb (6.8-7.2) and PLT (6,000-8,000). On Hospital Day Five, PLT dropped to 5,000, requiring treatment with IV immunoglobulin (IVIG) 1g/kg. PLT increased to 51,000. On Hospital Day Seven, Hgb increased (7.9), and she was discharged home on Prednisone 80 mg with close Hematology follow-up. Labs one week after discharge showed increased Hgb (10.1) and PLT (67,000).

Discussion: ES is difficult to treat with increased relapses, infections, thrombotic complications, and mortality (20-24%) versus isolated wAIHA or thrombocytopenia. The mechanism of ES is undetermined but is diagnosed by ruling out other etiologies of concomitant hemolytic anemia and thrombocytopenia. ES is idiopathic or secondary to Systemic Lupus Erythematous, Chronic Lymphocytic Leukemia or other lymphoproliferative disorders, or infections. Thus, an extensive workup is essential. Treatment is derived from wAIHA and ITP guidelines, including corticosteroids, Rituximab, IVIG, transfusions, immunosuppressants, or splenectomy. Corticosteroids are first line ES treatment. Yet, second line therapies are often required. After multiple days of high-dose corticosteroids, an asymptomatic but critically low PLT in this patient prompted IVIG treatment, producing a robust increase in PLT. This indicates IVIG may be a beneficial treatment to boost corticosteroid response on initial presentation, especially in severe thrombocytopenia. Platelet transfusions were ineffective. Rituximab, an adjunct treatment, was not started initially due to improvement in Hgb and PLT. Treatment of ES here required multiple modalities based on patient response. The severity of presentation and long-term mortality risk of ES demands more specific management guidelines.

5) SMALL BOWEL OBSTRUCTION WITH A SIDE OF VEGETABLE BEZOAR

Karina Alagoa; Pooja Patel, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: A mechanical small bowel obstruction is a physical obstruction in the small intestine that prevents food from moving through the digestive tract. There are numerous causes of mechanical small bowel obstruction, including hernias, food, adhesions, or tumors. A vegetable bezoar is a mass of undigested plant material that obstructs the digestive tract.

Case: A 90-year-old female patient with a past medical history of breast cancer, diastolic and systolic congestive heart failure, lung mass, anemia, anxiety, atrial fibrillation, small bowel obstructions and lesions presented to the ER with abdominal distension, nausea, and retching. She presented profoundly dehydrated with leukocytosis, elevated lactic acid, contraction alkalosis, hyponatremia, and hemoconcentration, all of which improved overnight with IV hydration. The patient has advanced dementia and has declined further abdominal surgery for small bowel obstructions in the past. Despite this, she has had successful nonoperative management of bowel obstructions due to adhesions multiple times in the past 5 years. The patient does not have a lot of dentition and eats a lot of vegetables, particularly around the holiday season. On this occasion, she was found to be profoundly dehydrated, and tachycardic, and a CT scan showed evidence of a high-grade distal small bowel obstruction with a transition point and upstream small bowel fecalization. The surgeons found the site of the obstruction and the vegetables causing the obstruction. Fortunately, there was no evidence of ischemia or perforation that would cause complications. The patient had been refusing surgery for the past few years, and now, with her age and comorbidities, the risks were even higher. Due to this, she was managed conservatively with repeated reiterations to the patient about not consuming raw/ whole vegetables. Surprisingly enough, we could visualize the site of obstruction and the veggies on the CT scan.

Discussion: This case is a fascinating case of small bowel obstruction in an older patient caused by poorly digested food. Food causing a bowel obstruction is uncommon and this case was even more intriguing because the vegetables could be seen on a CT scan causing the obstruction. It was also interesting to note that the obstruction was successfully managed without the need for surgical intervention.

6) HEPATIC ADENOMA RUPTURE

Ronnie Alramahi; Mark Kleedehn, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Hepatocellular adenoma (HCA), also known as hepatic adenoma, is a rare, benign liver tumor commonly found in young women and often linked to the use of estrogen-containing medications such as oral contraceptives (OCs). The condition is also associated with anabolic steroid use, genetic syndromes like glycogen storage diseases (GSD) and familial adenomatous polyposis, and metabolic syndrome. Hepatocellular adenomas (HCAs), which can arise in these contexts, present diverse subtypes that necessitate differentiation for appropriate clinical management due to their varying risks for complications such as hemorrhage or malignant transformation

Case Presentation: A 73-year-old female with a past medical history of hypertension, hyperlipidemia, prior OCP use, and distant history of breast cancer presented with right upper quadrant pain and pre-syncopal episodes. When she arrived at the emergency department, she was afebrile with normal vital signs. Laboratory results showed a hemoglobin level of 13.8 g/dL. A CT abdomen and pelvis revealed a large heterogeneously enhancing mass measuring 11.9 x 8.4 x 9.3 cm in the inferior right lobe of the liver. No active hemorrhage was identified at the time of imaging, but there was extracapsular rupture with hemoperitoneum observed around the liver and spleen and in the right paracolic gutter and pelvis. Differential diagnosis included a hepatic adenoma, hepatocellular carcinoma, hemangiopericytoma, and angiosarcoma. Interventional radiology (IR) was consulted for biopsy of the hepatic mass and embolization. Two 18-gauge core needle biopsies were obtained from the mass, which confirmed the presence of hepatic adenoma with an HNF1A inactivated subtype. Bland arterial embolization of the mass was completed with 100-700 um tris-acryl gelatin microspheres to achieve near-complete stasis of the mass's arterial supply.

Discussion: Each adenoma subtype presents distinct clinical features and risks, such as the propensity for hemorrhage or malignant transformation. These tumors can be classified into four primary subtypes based on genetic and molecular characteristics: hepatocyte nuclear factor-1-alpha (HNF-1α) mutated HCA (H-HCA), β-catenin-mutated HCA (β-HCA), inflammatory HCA (I-HCA), and unclassified HCA (U-HCA). MRI, with its detailed imaging capabilities, is the best modality for identifying subtype-specific characteristics. The understanding and identification of these imaging features enable more accurate diagnosis and tailored management strategies for patients with HCA.

7) DISSEMINATED FUSARIUM INFECTION FOLLOWING INDUCTION CHEMOTHERAPY WITH CLADRIBINE FOR HAIRY CELL LEUKEMIA

Saba Anwer; Adam Kidwell, MD[1]
Medical College of Wisconsin, Milwaukee, WI

Hairy cell leukemia (HCL) is a very rare lymphoid malignancy characterized by light microscopy showing mature B-cells with abundant cytoplasm and classic "hairy" projections, as well as flow cytometry displaying strong expression of CD11c, CD22 and CD103. Many patients present asymptomatic and clinical observation is a reasonable treatment course. Symptomatic HCL typically presents with pancytopenia, splenomegaly and increased susceptibility to infection. When treatment is needed, standard upfront induction chemotherapy for HCL is cladribine, a purine nucleoside analog, daily for five total days. Efficacy of treatment is excellent with estimated overall survival estimated at 95 percent at five years. Use of this regimen has known hematologic side effects, most notably, neutropenia. The largest real-life study of patient's undergoing induction chemotherapy showed infection was reported in around 30% of all patients, 3% of which were fatal. One-third of all fatal infections were due to fungus, all of which were due to aspergillosis. Currently, there are no National Comprehensive Cancer Network (NCCN) guidelines on antifungal prophylaxis in patients undergoing treatment for HCL.

Here, we report a case of disseminated angio-invasive fusarium infection in an otherwise healthy, young, male patient who completed cladribine chemotherapy for HCL. His initial hospitalization for chemotherapy administration was uncomplicated outside of anticipated neutropenia. Ten days following discharge, the patient presented to the emergency department with a fever of 101.5°F and an absolute neutrophil count (ANC) of less than 500. Presenting vital signs showed tachycardia and fever but were otherwise unremarkable. At that time, the patient reported diffuse joint pains, stiffness, and a developing nonpruritic, erythematous papular rash on the arms, thighs, lower legs, and feet. On examination, patient had difficulty ambulating and opening their mouth due to stiffness and myalgias in association with wrist edema limiting overall range of motion. Rashes on the patient's arms, legs, and feet presented as nodules with a ring of erythema around a central violaceous dusky eschar. P was started empirically on vancomycin, cefepime and amphotericin B. Dermatology was consulted who obtained punch biopsies of the lesions showing Fusarium. The most significant prognostic indicator of recovery from fusarium infection is the resolution of neutropenia and the patient started daily filgrastim on day 4 of hospitalization until day 7. Following resolution of fever and improved ANC, the patient was discharged with dual antifungal treatment with amphotericin B and voriconazole.

Fusarium species are ubiquitous but rarely ever cause infection in immunocompetent hosts. While rare, fusariosis infection poses a significant risk for patients with neutropenia. Treatment is debated among infectious disease experts but requires prompt resolution of neutropenia. In this case of disseminated fusariosis, we call to question the need for standard antifungal guidelines and prophylaxis in patient's undergoing induction therapy for HCL.

8) TOO RISKY? SAYS WHO? : POTENTIAL LIVING KIDNEY DONORS' PREFERENCES ON WHO SHOULD INFLUENCE DONOR ELIGIBILITY DECISIONS.

Sierra Auleta; Esra Alagoz, PhD; Carrie Thiessen, MD, PhD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: There is a growing cohort of medically complex potential living kidney donors (pLKD) with an increased risk of developing kidney disease. Transplant centers strive to balance respect for donor autonomy with non-maleficence when approving surgery that provides no medical benefit. Centers weigh these values differently resulting in heterogenous eligibility criteria for medically complex donors. We examined pLKDs' perspectives on who should be involved in increased risk eligibility decisions.

Methods: We conducted a prospective, longitudinal, mixed methods study of pLKDs from three high-volume transplant centers in the US. Participants completed interviews and surveys at: the initial evaluation (T1), two weeks before pre-op or two weeks post non-donation decision (T2), and six months after T2 (T3). The electronic medical record confirmed participants' donation statuses. Questions about decision-making preferences at T1 and T3 included: "Think about a case in which a donor wants to take more risks than a transplant center is comfortable with. Who do you think should decide what level of risk the donor should be allowed to take?" and "How would you like transplant centers to work with a donor to resolve a difference of opinion about how much risk a donor should be allowed to take?" Interviews were audio-recorded, transcribed, and analyzed in Nvivo 12. Using Grounded Theory, we inductively identified themes in the data. After achieving high interrater reliability, transcripts were independently triple-coded; discrepancies were resolved with discussion. Univariate analyses assessed associations between characteristics and pLKDs' preference for a center decision-maker.

Results: 180 pLKDs participated in this study. The cohort was 59% female, mean age of 44 years, and 87% Caucasian. Participants' decision-maker preferences included: center (T1 44%, T3 46%), center or donor depending on the specific context (T118%, T3 19%), donor (T1 22%, T3 17%), a collaborative decision between donor and center (T1 12%, T3 9%), and third-party decider (T1 3%, T3 8%). The proportion of pLKDs in each preference category was stable from T1 to T3, but 54% of pLKDs changed preferences from T1 to T3. Neither demographic characteristics nor donor eligibility were associated with center decision-maker preference at T3. The most common reasons at T3 for preferring the center as the decision-maker were the centers' expert medical knowledge about risk, pLKDs' bias due to their relationship with their recipient, and recognition that physicians may find it unethical to cause undue harm to donors. Participants preferring donor decision-makers emphasized their right to make decisions about their body, the center's inability to understand the value of their recipient and acceptance of increased risk in exchange for their recipient's health.

Conclusion: Despite the growing support of shared decision-making in medicine, after completing the donor evaluation process, only 44% of pLKDs believed the donor should be involved in some aspect of their eligibility decision. The instability in individual participant preferences from T1 to T3 may be due to the education and perspectives gained from the evaluation experience. The diversity of reasons provided by center versus donor decision-makers highlights the complex considerations of pLKDs regarding kidney donation eligibility.

9) MENTAL HEALTH COMORBIDITIES IN THOSE SEEKING LONG-TERM SUBSTANCE USE TREATMENT

Grace Buechel
Medical College of Wisconsin, Milwaukee, WI

Those suffering from substance use disorder frequently struggle with various mental health comorbidities in addition to substance use. The effects of both substance use and mental illness can be detrimental to any individual's progress towards their goals. In identifying mental health comorbidities in those seeking long-term substance use treatment, root maladaptive behaviors and beliefs can be addressed, and recovery education can be guided. The first residents of the Gospel TLC underwent an intake assessment that utilized the DSM-5-TR, a cross-cutting symptom measure to assess mental health domains that are significant across psychiatric diagnoses. The DSM-5-TR was scored, and domains indicative of "threshold to guide further inquiry" were explored using Level 2 cross-cutting symptom measures. These specific questionnaires alluded to likely mental health comorbidities among the Gospel TLC residents. 7 adult male participants completed the initial intake DSM-5-TR and additional symptom measures. Upon final scoring, likely mental health comorbidities were identified, with the most frequent being manic/hypomanic conditions, unspecified personality traits, and unspecified anxiety disorders. Results indicate a high likelihood of mental health comorbidities among the residents of the Gospel TLC seeking long-term addiction treatment. Though full psychiatric evaluation is recommended to confirm, previous diagnoses align with the analyzed results. Consequently, understanding of likely mental health comorbidities will help shape the Gospel TLC curriculum and prompt individual discussions to best fulfill the goal of a successful recovery.

10) MENTAL HEALTH COMORBIDITIES IN INDIVIDUALS EXPERIENCING HOMELESSNESS IN WAUSAU, WI

Grace Buechel; Alec Hafferman
Medical College of Wisconsin, Milwaukee, WI

Those experiencing homelessness have an increased rate of health disparities, especially regarding mental health. The effects of mental illness can be detrimental to any individual's progress toward their goals. This research aimed to discover the specific mental health comorbidities for those experiencing homelessness in Wausau, WI, as this vulnerable population has a unique set of circumstances that deter them from seeking and/or obtaining effective mental health care support. This research can be utilized in the future through the newly developing Psychiatry Free Clinic in Wausau to better support this underserved population, as well as to increase awareness and discuss new or available resources to increase mental wellness for those experiencing homelessness. Using a combination of the GAIN-SS and validated psychiatric questionnaires as measurement tools (GAD-7, PHQ-9, PC-PTSD-5, etc.), this study aimed to identify likely mental health comorbidities in individuals experiencing homelessness in Wausau, WI based on symptomatic scores. Additional survey questions aim to (i) assess the relationship between homelessness and mental health in the area, (ii) collect data regarding previous psychiatric diagnoses, and (iii) identify local mental health resources utilized by Wausau's homeless population. Results revealed a high likelihood of many respondents struggling in various mental health domains. The most number of respondents indicated anxiety or depression domains were a significant struggle. Additionally, 25% of respondents endorsed suicidal ideation in the past few weeks. In terms of adverse childhood experiences (ACEs), half of the screened ACEs were experienced by each individual on average. In conclusion, Wausau's homeless population is struggling with mental health comorbidities, and these may vary by individual. A large percentage appear to be struggling with anxious and depressive symptoms. Related to mental health challenges, the population additionally seems to struggle with substance use, and many have experienced numerous adverse childhood experiences. It is our belief that easily accessible mental health resources may benefit the surveyed population.

11) HEALTHCARE DISPARITIES IN CANCER CARE: UNDERSTANDING RURAL PATIENT PERSPECTIVES ON CLINICAL TRIALS

Jeffrey Bushnell
Medical College of Wisconsin, Green Bay, WI

Healthcare disparities exist in cancer care, with rural populations experiencing higher mortality rates compared to urban counterparts (Nuako et al., 2022; Henley et al., 2017). However, studies suggest similar outcomes when rural patients receive equal access to care (Unger et al., 2018). Efforts are underway to bring comprehensive cancer care to rural areas, but access to clinical trials remains limited. This study investigates patient attitudes and interest in oncology clinical trials in the Upper Peninsula of Michigan, where perceived low demand discourages staffing by clinical research associates.

A cross-sectional anonymous survey was administered to patients receiving treatment at Schoolcraft Memorial Hospital in Manistique, MI. The results showed that most patients had not participated in or been offered participation in an oncology clinical trial. Most respondents were concerned about extra costs associated with clinical trial participation, yet many expressed willingness to participate if it benefited their health, regardless of cost or additional effort. Patients indicated they would be more willing to participate if trials were offered locally and believed that information and access to clinical trials should be improved in rural areas. The main reason for non-participation was a lack of knowledge or awareness about clinical trials. These findings provide support to increase access to clinical trials in rural populations.

12) IMPACT OF INCREASED PLASMA CERAMIDE ON HUMAN MICROVASCULAR FUNCTION

William Butak; Maria Jaramillo-Torres, MD; Julie Freed, MD, PhD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Although extent of atherosclerotic disease has been the primary point of focus for predicting major adverse cardiac events (MACE), novel studies have shown that coronary microvascular dysfunction is a stronger predictor for MACE than atherosclerosis alone.

Elevated plasma ceramide is also a strong independent risk factor for MACE and promotes microvascular dysfunction. We have previously shown that chronic exposure to exogenous ceramide induces endothelial dysfunction in an ex-vivo model using isolated arterioles from healthy adult patients, however the in-vivo effect of increased plasma ceramide on human peripheral microvascular function remains unknown. Here, we test the hypothesis that peripheral microvascular endothelial function will be impaired in healthy adults following consumption of a high-fat meal consisting primarily of long-chain fatty acids, known to increase plasma ceramide as compared to one consisting primarily of medium-chain fatty acids.

Methods: This is a double-blinded, randomized controlled, cross-over design trial. Local heating to 39°C will be utilized to measure the endothelial-derived, nitric oxide component to dilation as determined by changes in red blood cell flux and measured using Laser Doppler flowmetry in the ventral forearm of subjects. Perfused vessel density (PVD) and the microvascular flow index (MFI) will be measured using incident darkfield imaging (CytoCam). Baseline microvascular measurements and plasma ceramide are collected in subjects who have fasted for 12 hr and have abstained from rigorous exercise and caffeine for 24 hr prior to being administered a high-fat shake consisting of long chain or medium chain fatty acids. Repeat blood draws and microvascular measurements are repeated at 2 and 4 hr.

Results: We anticipate that perfused vessel density (PVD) and the microvascular flow index (MFI) in the sublingual microcirculation will be decreased as well as the nitric oxide response to 39°C in the forearm after the ingestion of the high-fat shake. We expect that the degree of endothelial dysfunction will be more pronounced when patients are introduced to long-chain fatty acids as compared to medium-chain fatty acids and that the degree of endothelial impairment will correlate with plasma ceramide.

Significance: This investigator-initiated clinical trial will provide the first in vivo evidence of the direct effect of plasma ceramide on human microvascular endothelial function and may conceptually link elevated plasma ceramide to microvascular dysfunction and future increased cardiac risk.

13) SYNCHRONIZING BRAIN ACTIVITY TO ENHANCE VERBAL SHORT-TERM MEMORY

Kaylynn Carew; Jeffrey Binder, MD; Priyanka Shah-Basak, PhD
Medical College of Wisconsin, Milwaukee, WI

Objectives: Brain oscillatory connectivity among frontal, parietal, and temporal regions diminishes over the course of normal aging, resulting in language, memory, and other cognitive decline. Verbal short-term memory (STM) appears to be most vulnerable during normal aging and is progressively more impaired in neurodegenerative disease. A novel neuromodulatory technique called transcranial alternating current stimulation (tACS) is shown to entrain brain's oscillatory activity and improve cognitive and motor outcomes. But the effects of tACS on verbal memory in healthy older individuals is largely unknown. In this pilot study, we investigated short-term effects of tACS, in the theta and alpha frequency ranges (4-8 Hz) targeted to the frontal and temporoparietal (TP) brain regions, on phonological short-term memory (pSTM).

Methods: Eligible participants were right-handed, native English speakers, between the ages of 50-70 years, with no comorbid neurological or psychiatric disorders. Ten participants completed two to four separate sessions of 20-minutes tACS. All participants underwent in-phase (peaks and troughs of tACS aligned between brain regions) and anti-phase (peaks and troughs completely misaligned) tACS in the theta range (4-7 Hz). A subset of participants returned for two additional sessions at an alpha frequency (8 Hz). Participants completed a pSTM task at varying difficulty levels, estimating pSTM capacity, immediately prior to, during, and after tACS. The main outcome measures were changes in difficulty level and reaction time (RT) between in-phase and anti-phase tACS over pre-, during- and post-tACS conditions.

Results and Discussion: Five participants completed tACS with theta and the rest completed both theta and alpha sessions. Results show a trend toward increased pSTM performance during theta tACS when targeting the left middle frontal gyrus and inferior parietal gyrus within the in-phase condition. There may be some effect on pSTM performance when targeting left inferior frontal gyrus and inferior parietal gyrus when delivered in-phase in the alpha frequency range. Data collection remains ongoing, however, these results will guide future efforts to increase pSTM by optimizing the frequency and montage selection. In addition to the stated goal of improving language outcomes in otherwise healthy individuals, the current data and optimization procedures will help interpret results from parallel studies involving tACS in clinical populations with language impairments such as in individuals with post-stroke aphasia.

14) ENHANCING FARM WORKER AWARENESS: AN APPROACH TO FIGHT ANTIBIOTIC RESISTANCE

Olivia Chao; Elsie Gonzalez; John Shutske, PhD
University of Wisconsin School of Medicine and Public Health, Madison WI

Objectives: This study aimed to develop and implement an educational program targeting dairy farm employees to combat antibiotic resistance. Grounded in the Health Belief Model and Theory of Planned Behavior, the objectives were to increase knowledge about antibiotic resistance, its transmission, and preventive measures, and to assess the effectiveness of the intervention in promoting behavioral changes among farm workers.

Methods: The study established expected outcomes from the intervention, aligned with key principles of hygiene and antibiotic usage. Educational materials, including instructional videos and fact sheets, were developed and delivered to participants. Pre- and post-intervention assessments were conducted to measure knowledge gains and behavioral change intention, guided by the Health Belief Model and Theory of Planned Behavior frameworks.

Results: A series of pilot sessions involving 32 workers from five farms demonstrated statistically significant increases in knowledge across desired outcomes (p-value $\leq$ 10-6). In most of the categories, the willingness and likeliness to change was greater than 0.8 indicating that almost all the workers were more willing and likely to make behavioral changes after the educational program. All the workers were willing to make behavioral changes regarding only taking antibiotics prescribed by a healthcare professional and washing hands before eating. The one category where workers average score was less than 0.8 was the willingness and likeliness to "Never share antibiotics with another friend, family member, or co-workers." A significantly greater proportion of workers, ($p < 0.006$), expressed that time pressure was a barrier to change.

Conclusion: Tailored educational interventions, informed by the HBM and TPB, have a strong potential to play an important role in addressing antibiotic resistance on dairy farming. Challenges such as personal antibiotic sharing and time constraints demonstrate the need for ongoing research and refinement of intervention strategies. By continuing to innovate and adapt interventions, we can work towards combating the spread of antibiotic resistance.

15) A CHALLENGING CASE OF LATE ONSET LUPUS PRESENTING AS DIFFUSE ALVEOLAR HEMORRHAGE

Nickolas Chen; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Introduction: Systemic lupus erythematosus (SLE) is an autoimmune disease primarily affecting women of childbearing age. While musculoskeletal and mucocutaneous manifestations are the most common presentations of SLE, diffuse alveolar hemorrhage (DAH) is a rare but potentially fatal complication. This case report presents an atypical instance of DAH as the initial presentation of late-onset SLE.

Case: A 78-year-old female with history of chronic kidney disease, coronary artery disease post-percutaneous coronary intervention, and gait instability presented to the ED in May 2024 following a fall. She reported loss of balance, resulting in a head injury. She presented with a head laceration but was otherwise in stable condition. Review of systems and physical examination were unremarkable without gastrointestinal, genitourinary, cardiac, or pulmonary symptoms. The patient denied rashes, joint swelling, or inflammation but reported dry eyes and mouth. Laboratory workup revealed an ESR of 70 mm/hr, CRP of 9.12 mg/L, BUN of 35 mg/dL, creatinine of 2.61 mg/dL, WBC of 17.2 x10^9/L, Hgb of 10.2 g/dL, and urinalysis showing >100 WBC with nitrite negative. A head CT scan showed no acute intracranial process. The head laceration was repaired, and the patient was admitted for abnormal urinalysis, elevated WBC, and worsening kidney function, possibly secondary to lupus nephritis.

The patient had previous episodes of instability in September and November 2023, prompting electromyography and an autoimmune workup. The autoimmune workup revealed a positive anti-Smith, RNP, SCL-70 antibodies, and ANA profile. Additional testing for antiphospholipid syndrome (APLS) showed positive lupus anticoagulant, beta-2 glycoprotein IgM, anticardiolipin antibody IgM, and Coombs test. Based on these findings, an official diagnosis of SLE was made.

Initially, the patient improved with supportive care, but on hospital day 5 oxygen requirements escalated, and on day 7 she required intubation. Bronchoscopy and bronchoalveolar lavage confirmed DAH. Her renal function also worsened, requiring continuous veno-venous hemofiltration. A renal biopsy to determine lupus-associated renal involvement was deferred due to her preexisting conditions. Given the diagnosis of lupus, APLS, worsening renal failure, and new-onset DAH, the patient was started on high-dose steroids, plasmapheresis, and cyclophosphamide. Her respiratory and renal status improved with treatment, leading to extubation on day 14. By day 25, she no longer required oxygen, creatinine returned to baseline, and was discharged in stable condition on warfarin, steroid taper, and cyclophosphamide.

Discussion: This case highlights an atypical presentation of SLE in a 78-year-old female. Typically, SLE is diagnosed between ages 15-45, with late-onset SLE (defined as onset after age 50) accounting for only 10-20% of cases. Additionally, she did not exhibit any of the common musculoskeletal or mucocutaneous symptoms of SLE; instead, her initial presentation was DAH. While pulmonary complications occur in 50-70% of SLE patients, it is usually mild, such as pleuritis, pneumonitis or pulmonary hypertension. DAH is observed in only 1.6-5.7% of SLE patients, typically 1.8-7.1 years after initial diagnosis, with a mean onset age of 24-43 years. DAH is life-threatening and requires prompt treatment. The patient's prior autoimmune workup facilitated timely diagnosis and treatment of her DAH, leading to a favorable outcome.

16) AN UNUSUAL CASE OF HEMATURIA

Nathan Deep; Ridhwi Mukerji, MD, FACP, CHCQM-PHYADV
Medical College of Wisconsin, Milwaukee, WI

Introduction: Vagococcus is a rare pathogen in humans. There are limited studies on the clinical signs and symptoms, optimal methods for identification, and antimicrobial susceptibility testing for this zoonotic pathogen. We report a patient with a urinary tract infection with Vagococcus Fluvialis in the urine.

Case Presentation: 76-year-old Caucasian male with past medical history significant for prostate adenocarcinoma, status post external beam radiation with resultant radiation cystitis, atrial fibrillation on anticoagulation, essential hypertension, and severe aortic valve stenosis presented with acute onset of hematuria occurring for two weeks. The patient was seen in the emergency room the day prior to admission and underwent bladder irrigation using a 2-way foley catheter. Patient's hematuria persisted and he was admitted. He had chills but no associated fevers, nausea, vomiting, chest pain, shortness of breath, diarrhea, or bloody stools. He denied recent upper respiratory illnesses, sick contacts, or recent travel history. He was a nonsmoker and admitted to having 5-7 alcoholic drinks per week.

Notable medications included daily rivaroxaban 20 mg, lisinopril 5 mg, and hydrochlorothiazide 25 mg.

Vital signs were temperature 99.8°, respiratory rate 18, pulse 70, pulse ox 92% on room air, BP 136/64.

On physical examination, the patient was in no distress. AAOx3 and did not have any pallor or icterus. Heart tones were regular with ESM 2/6. Lungs were clear and the abdomen was nontender with no palpable masses. Lab results were notable for sodium of 119, potassium 4.0, chloride 85, bicarb 23, BUN 7, creatinine 0.54, serum Osmolality 252, glucose 109. Urinalysis was positive for trace bacteria, RBC greater than 50/hpf, WBC 20-50/hpf, trace leukocyte esterase. Urine culture grew V. Fluvialis greater than 100,000 colonies/mL. Due to persistent hematuria despite continuous bladder irrigation, urology recommended transfer to tertiary care facility.

Discussion: Here we present a rare case of a Vagococcus infection, a gram-positive coccus lacking catalase activity. While commonly found in fishes and animals including pigs, cattle, and horses, human cases of Vagococcus are uncommon. Modes of transmission to humans from animals have not been elucidated yet.

Fewer than two dozen human cases have been reported. In humans, the bacteria have been detected in peritoneal and cerebrospinal fluid, blood, urine, and skin wounds. V. Fluvialis was isolated in our patient's urine but not his bloodstream.

Literature suggests Vagococcus is susceptible to ampicillin, cefotaxime, trimethoprim/sulfamethoxazole, vancomycin, and linezolid and resistant to clindamycin, levofloxacin, and ofloxacin. Our isolate was sensitive to ceftriaxone, gentamicin, levofloxacin, cefepime, and trimethoprim/sulfamethoxazole and resistant to ampicillin, nitrofurantoin, and cefazolin. While there is no established identification method for V. Fluvialis, MALDI-TOF MS and 16 S rRNA have been used previously. We used MALDI-TOF MS to identify the organism.

Vagococcus is rare in humans. Obtaining occupational history and exposure to animals/fish in patients presenting with V. Fluvialis could help determine probable exposure. This case highlights the importance of occupational history. The low prevalence of this case in literature may be due to this being under-recognized and underreported.

17) SCREEN TO SAVE: A COLORECTAL CANCER EDUCATIONAL INITIATIVE IN NORTHERN WISCONSIN COMMUNITIES

Carson DePagter; Ashley Smith, RN; Noelle LoConte, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

BACKGROUND: Colorectal cancer (CRC) is the 2nd most common cause of total cancer deaths in the US. At earlier stages, the cure rates are substantially higher. In Wisconsin, 65% of adults aged 45-75 meet current CRC screening guidelines. The Screen to Save (S2S): National Cancer Institute (NCI) Colorectal Cancer Outreach and Screening Initiative aims to increase CRC screening rates with a special focus on raising rates amongst racially and ethnically diverse communities and in rural areas. Our study aims to assess the effectiveness of the NCI designed educational curriculum to increase CRC knowledge and the retention levels of knowledge after three months.

METHODS: A Community Health Educator (CHE) advertised the study in public spaces in northern Wisconsin communities. Interested subjects were assessed for eligibility. Eligible participants completed a 14 question, 18-point CRC knowledge assessment before, immediately following, and three months after receiving an NCI-developed educational intervention. The structure of the intervention varied by each participant's available technology. A single person provided all interventions. Knowledge change was examined as a percentage of correct answers gained (positive scores) or lost (negative scores). The median was utilized to divide participants into 2 groups: little/no knowledge change (≤median) vs knowledge change (>median). Categorical data was analyzed with Chi-square tests. Continuous variables were analyzed with Mann-Whitney U and Wilcoxon signed-rank; statistical significance was defined as $p<0.05$.

RESULTS: The study had a total of 136 participants. Most were female (67.6%, n=92), White (73.3%, n=99), college graduates (62.5%, n=85), insured (97.8%, n=133), and rural (92.6%, n=126) and the median age was 61 years old. 24.4% were American Indian/Alaskan Native (AI/AN). The three-month follow-up had a drop-out rate of 25%. The assessed knowledge before education had a median of 16pts (IQR 14-17), but immediately following, this increased to a median of 18pts (IQR 18-18), p-value<.001. Knowledge fell at the three-month follow-up to a median of 17pts (IQR 16-18), but it was still higher than at baseline, p-value<.001. AI/AN and White participants had differences in their distribution of post-intervention (AI/AN median 18pts, IQR 17-18; non-AI/AN median 18pts, IQR 18-18; p-value<.001) and three-month follow-up scores (AI/AN median 16pts, IQR 16-17; non-AI/AN median 17pts, IQR 17-18; p-value<.001). Males had a lower distribution of scores than females at baseline (male median 15pts, IQR 13-16; female median 16pts, IQR 14-17; p=.003) and at three-month follow-up (male median 17pts, IQR 16-17; female median 17pts, IQR16-18; p=.022). There was an association between education level and gaining knowledge at the post intervention time point (p=.024), as well as retaining knowledge at the three-month follow-up (p<.001).

CONCLUSIONS: Among a rural Wisconsin population, the Screen to Save intervention was effective at increasing CRC knowledge both immediately following the intervention and, to a lesser extent, three-months later. However, the results suggest disparate efficacy of the intervention in various demographic groups. CRC education tools may have to undergo further editing for cultural sensitivity and applicability to various demographics to ensure equitable increases in knowledge across population groups.

18) AN EYE FOR AN EYE, AN EAR FOR AN EAR: A MIDWESTERN CASE REPORT OF VOGT-KOYANAGI-HARADA SYNDROME

Neil Dixit; Emily Koller; Nicole Avendano, MD; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Vogt-Koyanagi-Harada (VKH) Syndrome is an autoimmune, inflammatory condition characterized by a constellation of symptoms affecting the eyes, ears, integument, and meninges.

A 23 year old cisgender female with no significant past medical history presents with three weeks of severe headache described as the worst of her life, eye pain, vision changes with photophobia, hearing loss with tinnitus and phonophobia, nausea, vomiting, and vertigo when supine. She had presented twice to an outside hospital and initially received antibiotics, with no improvement. Admission vitals, physical examination, and laboratory studies were unremarkable. Infectious workup revealed nothing of significance. Ophthalmology and otolaryngology were consulted given vision and hearing impairment. Eye exam showed thickened choroid plexus, paracentral acute middle maculopathy lesions on optic coherence tomography, and optic nerve leakage on fluorescein angiography. Ophthalmology exam also revealed keratic precipitates and vitritis bilaterally. On exam, otolaryngology found Weber test lateralized to the left, and Rinne test with air conduction favored over bone conduction bilaterally, consistent with sensorineural hearing loss. Based on the patient's clinical presentation and negative work up for alternative etiologies adequately explaining her constellation of symptoms, the diagnosis of Vogt-Koyanagi-Harada Syndrome was made. The patient was started on IV methylprednisolone with improvement of ocular and meningismus symptoms by day 4, followed by a twenty four hour trial period of oral prednisone prior to discharge. Auditory symptoms had improved somewhat, though outpatient follow up with otolaryngology is necessary to monitor for ongoing hearing loss.

We present the case of a patient diagnosed with Vogt-Koyanagi-Harada Syndrome, a rare, inflammatory, autoimmune disorder after presenting with vision loss, hearing loss, and symptoms of meningismus. This case highlights the importance of a broad differential, especially in diagnoses classically associated with certain racial and ethnic groups, as delay in diagnosis and treatment may result in irreversible sequelae. Finally, this case of VKH emphasizes the importance of coordinating with colleagues to ensure prompt diagnosis and management to reduce subsequent morbidity and mortality.

19) IMPROVING PHONOLOGICAL ABILITY IN STROKE SURVIVORS WITH APHASIA USING TRANSCRANIAL ALTERNATING CURRENT STIMULATION

Katrina Erickson; Jeffrey R. Binder, MD; Priyanka Shah-Basak, PhD
Medical College of Wisconsin, Milwaukee, WI

Aphasia is a devastating communication disorder that often occurs after a left hemispheric stroke. Aphasia, affecting about one-third of stroke survivors, negatively impacts communication, independence in daily living, and emotional health. A subset of language impairments reflect phonological abilities, or the perception, retrieval and maintenance of speech sounds. In this study, we sought to improve maintenance of speech sounds or phonological short-term memory (pSTM) in 11 stroke survivors with aphasia (SWA) utilizing transcranial alternating current stimulation (tACS). This form of noninvasive brain stimulation entrains brain oscillatory activity, inducing synchrony across distant brain regions underlying phonological processes to potentially augment pSTM in SWA. We tested three tACS conditions: in-phase, where AC was delivered with 0° phase difference to inferior frontal and temporoparietal brain regions, anti-phase (180° phase difference between regions) and sham stimulation, each delivered for 20 minutes. The amount of phonological information held in STM, or pSTM capacity, was measured as SWA' ability to correctly recognize differences in two short to long strings of sounds interleaved by a delay of 5 seconds. The change in pSTM capacity across the three tACS conditions was the primary outcome measure. We found pSTM capacity significantly increased during in-phase stimulation compared to anti-phase stimulation. These effects manifest only while stimulation is on, indicating that tACS effects do not outlast the stimulation period. These results are promising and partially reflect the patterns hypothesized. Future studies will include multiple tACS sessions over 3-5 days to evaluate the long-lasting effects of tACS on neuroplasticity. Ongoing parallel studies are evaluating oscillatory correlates of pSTM using magnetoencephalography recorded during the pSTM paradigm. We will gain important insights into the oscillatory mechanism of pSTM in SWA to optimize future applications of tACS.

20) ACCEPTABILITY, FACILITATORS, AND BARRIERS TO THE IMPLEMENTATION OF SHORT BRIEF INTERVENTION FOR ALCOHOL COUNSELING IN THE ONCOLOGY SETTING

Sydney Freiberg; Noelle LoConte, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: 77.7% of adults being treated for cancer consume alcohol, and of these, 38.3% engaged in hazardous drinking. Alcohol consumption is associated with seven different cancers, complications during cancer treatment, increased risk of recurrence, and increased risk of mortality. The U.S. Preventive Services Task Force recommends that Screening and Brief Intervention (SBI) for alcohol use be implemented into primary care settings due to its effectiveness at reducing hazardous alcohol use. While SBI for alcohol is routinely used in primary care settings and recently in gynecologic-obstetric settings, little is known regarding acceptability, barriers, and facilitators to implementing SBI for alcohol into the oncology setting.

Methods: Semi-structured interviews with oncologists practicing in the state of Wisconsin will be performed until thematic saturation is reached to identify what oncologists view as facilitators and barriers to implementing SBI for alcohol into their practice, as well as their prior knowledge of SBI and their baseline practice around alcohol use counseling in routine oncology care. Semi-structured interviews with cancer advocates from the state of Wisconsin will be performed regarding acceptability and barriers to using SBI for alcohol in the oncology setting and to understand how alcohol use was addressed during treatment. All interviews will be transcribed, coded, and reflexive thematic analysis will be performed.

Expected Results: We hypothesize that most oncologists are not currently addressing alcohol use and its risks with their patients, but that physicians and patients would support implementation of SBI for alcohol into the oncology setting and find it acceptable. We expect oncologists will anticipate similar barriers to providers in other specialties such as lack of time and training, the physician's own perception of alcohol use and risks, concern for the provider-patient relationship, and lack of reimbursement. We anticipate some facilitators to be reimbursement, training, awareness, and help of supportive staff.

Conclusion: We expect the results of this study will augment how medical subspecialists currently address alcohol use and its risks with their patients, and further implementation may reduce the need for primary care providers to do the bulk of alcohol counseling. Because SBI for alcohol has been shown to reduce hazardous alcohol use, its implementation into the oncology setting where patients spend more time with their providers and are more apt to make lifestyle changes could have numerous positive public health implications.

21) A RARE DIFFERENTIAL DIAGNOSIS OF SEIZURES: CHOLESTEATOMA IN A POST-TRAUMATIC PATIENT

Caleb Ganansky; Yazeed Qadadha, MD; Michael Puricelli, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Background: Recurrent acute otitis media (AOM) and chronic otitis media (COM) can result in many complications, including cholesteatoma, mastoiditis, and abscess formation. Cholesteatomas are characterized by the presence of squamous epithelium in the middle ear or mastoid. They often present with painless otorrhea and conductive hearing loss. Secondary acquired cholesteatomas form due to the implantation of external squamous epithelium into the middle ear, often through a perforated tympanic membrane (TM). Antibiotics have dramatically reduced the incidence of secondary infections from cholesteatomas, though infection may go unnoticed due to insidious signs and symptoms. Here we present a 17-year-old male patient with acute on chronic suppurative OM, in the context of a large middle ear cholesteatoma, complicated by mastoiditis and epidural abscess with a rare presentation of seizures.

Case Presentation: The patient is a 17-year-old male presenting to the emergency department with new-onset seizures. Relevant history is notable for a head trauma two years prior causing hemotympanum and a perforated TM. Subsequently, the patient had multiple medical visits for left otalgia, otorrhea, and fullness, and was treated for presumed chronic otitis media (OM) with eustachian tube dysfunction (ETD). Attempts to address his COM and ETD included multiple courses of otologic antibiotic drops, systemic antibiotics, and two sets of bilateral tympanostomy and myringotomy tubes over the next 18 months.

Two weeks before presentation, audiometric analysis showed the patient's left ear having conductive hearing loss. Subsequent computed tomography (CT) temporal bones without contrast showed middle ear opacification. The patient subsequently developed left-sided bloody otorrhea and worsening otalgia prompting two separate emergency room visits and additional prescriptions of otologic drops, systemic antibiotics and analgesics.

One day prior to a planned clinic appointment, the patient presented to an outside emergency department after a witnessed seizure at home followed by a post-ictal state. He regained orientation and alertness within minutes and had a reassuring neurologic exam. An otoscopic evaluation was not documented. CT head non-contrast demonstrated persistent left middle ear opacification. The patient was discharged in stable condition with plans for follow-up with Otolaryngology the following day. On the way to the planned clinic visit the next day, the patient experienced another seizure in the car. The patient subsequently presented to the emergency department at our institution.

Magnetic resonance imaging (MRI) of the head showed left-sided mastoiditis in the presence of a 3 mm epidural/subdural abscess formation, with concern for acutely infected cholesteatoma. Empiric broad-spectrum antibiotics and anti-epileptics were started, and the patient was admitted to the hospital. Otolaryngology performed emergent surgery to remove the cholesteatoma and drain the abscess the following day, and the patient had no recurrence of seizures following discharge one week later.

Discussion: Untreated COM can lead to many complications. This rare presentation of seizures in a patient with post-traumatic COM leading to cholesteatoma formation highlights the importance of casting a wide differential diagnosis for patients with seizures. Furthermore, prompt referral to specialty Otolaryngology services for patients with persistent COM despite appropriate antibiotic treatment should always be considered.

22) A CLOUDED PICTURE OF MULTIPLE SIADH ETIOLOGIES LEADS TO AN UNFORTUNATE DISCOVERY

Alexandra Harris; Ryan Powers, MD; Balpreet Kaur, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Syndrome of Inappropriate Antidiuretic Hormone (SIADH) should be considered in patients with hyponatremia, hypoosmolality, and urine osmolality above 100 mosmol/kg. There are multiple etiologies for SIADH including stroke, trauma, infection, medications, hypothyroidism, malignancy, Giant Cell Arteritis (GCA), and hereditary causes. Patients can present with multiple etiologies of SIADH concomitantly, making it challenging to address the underlying cause.

Case Presentation: A 67-year-old African American female with a past medical history of severe emphysema, an 18-pack-year smoking history, Graves' Disease on methimazole therapy, and suspected GCA who presented with shortness of breath, fatigue, headache, and vision changes was found to have severe hyponatremia with a sodium of 116.

Her serum osmolarity was 242, urine osmolarity was 843, and urine sodium was 144 which raised suspicion for SIADH. Chest x-ray was unrevealing beyond known emphysematous changes. She was placed on a fluid restriction and her serum sodium was closely monitored.

The patient was clinically hypothyroid on admission with a TSH of 0.1 and Free T4 of 0.62, likely due to her methimazole treatment thus methimazole was held. Since the patient presented with vision changes and headache during this admission, further work-up of GCA was pursued and a prednisone taper was initiated.

On hospital day two, the patient's shortness of breath worsened. A CT-Chest revealed a large (8.6cm x 7.2cm) mediastinal mass and multiple enlarged lymph nodes concerning for malignancy. Biopsies of the mediastinal mass and multiple lymph nodes were obtained, and final pathology revealed small cell lung carcinoma (SCLC).

PET-CT was obtained outpatient and revealed extensive mediastinal, left upper lobe, left supraclavicular, and left axillary involvement with additional numerous osseous metastases indicating extensive stage SCLC (T4N3M1).

Discussion: SCLC is a high-grade neuroendocrine tumor that occurs predominately in smokers and represents 15% of all lung cancers. It is an aggressive cancer, approximately 70% of patients present with metastatic disease. The median survival for patients with extensive stage SCLC is 8-13 months.

Hyponatremia due to SIADH can be the initial presentation of SCLC as these tumors ectopically secrete ADH, however, the diagnostic yield for ordering a CT-Chest in patients presenting with SIADH is unclear. It has been suggested that patients with long-standing smoking history, weight loss, or pulmonary symptoms should have a chest x-ray and a CT scan to assess for SCLC.

Notably, a chest x-ray was ordered for this patient, but the mediastinal mass was not visualized. The etiology of her shortness of breath was also clouded by her poorly controlled emphysema and noncompliance with her inhalers which likely contributed to a delay in ordering a CT-Chest.

While SCLC was likely the predominant cause of SIADH in this case, it is important to note that the patient's other potential etiologies of SIADH, hypothyroidism and GCA, still likely contributed to the presentation. This case illustrates how having concomitant etiologies for SIADH can cloud the work-up to address the underlying cause and emphasizes the importance of obtaining a CT-Chest in patients with risk factors for SCLC despite the presence or absence of other SIADH etiologies.

23) TRENDING LEFT ATRIAL VOLUMES IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY AND ATRIAL FIBRILLATION: A LACK OF GROWTH BETWEEN RESPECTIVE DIAGNOSES

Julia Hasik; Jennifer Choi, DO; Abhinav Sharma, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Hypertrophic cardiomyopathy (HCM) is the most common genetic cardiomyopathy in the world. Atrial fibrillation (AF) is a common arrhythmia in HCM, present in 20-30% of individuals. The high incidence of AF in HCM has been postulated to be due to left atrial (LA) enlargement from diastolic dysfunction, ventricular remodeling, and left ventricular outflow tract obstruction. We hypothesized that LA volumes are enlarged in this population and that there is an interval increase in LA volumes between diagnosis of HCM and AF, particularly in those whose AF develops later in the HCM clinical course.

Methods: A retrospective review of HCM patients was performed in the Medical College of Wisconsin Affiliated Hospital system from 2019-2023. Baseline demographics were obtained as well as cardiac imaging studies (TTE and cMRI) within 6 months of the respective diagnosis of both HCM and AF.

Results: There were 103 individuals with a concurrent diagnosis of AF and HCM included in this study. Mean age was 69.3 ± 13.3 years, 41.7% were female, and 44.7% had obstructive physiology. LA volume data was available at the time of HCM diagnosis in 72% (n= 74), AF diagnosis in 58% (n= 60), and both in 53% (n=55) of individuals. For individuals with both diagnoses, there was not a significant difference between average LA volumes at the time of HCM vs AF diagnosis (88.2 ± 46.1 vs 91.1 ± 42.6 ml, p= 0.57). In patients who developed AF after an established diagnosis of HCM (n = 49), the average time from HCM to AF diagnosis was 4.98 (± 5.75) years. There was also no statistical difference in LA volumes (79.7 ± 42.6 vs 87.8 ± 43.0 ml, p= 0.55) in this cohort.

Conclusion: While LA volumes in those with HCM and AF were found to be on average enlarged, there was no statistically significant difference between the LA volumes at the time of HCM and AF diagnosis respectively. When accounting for individuals who developed AF after HCM diagnosis, presumably later in their HCM disease course, there was again no significant evidence of interval enlargement in LA volume. This lack of interval growth may indicate that LA stretch occurs earlier in the HCM disease process and, in many cases, prior to clinical recognition of HCM. Overall, the number of available imaging studies was limited, and further investigation needs to be done to assess for temporal progression in LA size during the HCM clinical course.

24) PERCEPTION OF ACADEMIC HOSPITALISTS ABOUT ROUNDING METHODS

Chidinma Ikonte; Mohamed T. Abdelrahim, MA; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Background: Bedside rounding has traditionally been viewed as a crucial tool for training learners and providing quality patient care. However, in the last several years, medical professionals in the academic setting have shifted away from rounding at the bedside and adopting alternative methods and settings to complete daily rounds on their patients. This study explores the mixed responses to these changes and aims at identifying strategies for incorporating key educational components for the trainees while ensuring efficient and effective patient care.

Methods: A Qualtrics survey was conducted among academic hospitalists from the Division of General Internal Medicine at the Medical College of Wisconsin. This IRB approved study aimed to understand the perception of hospitalists about rounding methods, including their benefits and barriers. Quantitative data were analyzed using descriptive statistics and Fischer-tests to examine differences based on gender and years of experience as a hospitalist. All analyses were done using R version 4.1.2. P-value<0.05 was considered statistically significant. Additionally, the survey included an open-ended section for free-text commentary, which was reviewed to identify common themes.

Results: Of the 86 hospitalists surveyed, 36 responded to the survey, resulting in the response rate of 41%. The respondents were 53% male and 47% female. Most of the respondents (49%) had less than 5 years of work experience as a hospitalist. "Table rounds followed by bedside rounds" was the most preferred method of rounding (33%), followed by "bedside rounds" (24%), and "table rounds" (21%).

Key perceived benefits of bedside rounds included learning communication skills (94%), and empathy (92%), and involving patients in shared decision-making (91%).

Major barriers to bedside rounding included residents' duty hour restrictions (89%), and scheduled educational activities/didactics for the residents (86%).

The review of free text comments from the survey respondents produced several suggestions for changes to be made to bedside rounding to accommodate evolved hospital workflows while ensuring this form of teaching is retained. Key suggestions included standardizing the format and duration of bedside rounds, aligning patient geographical location with portable computers, and reinforcing the importance of bedside rounds.

Significance: The evaluation of the findings indicates that gender, with the exception of perceptions regarding non-clinical responsibilities as a barrier to bedside rounds, and the number of years as a hospitalist do not significantly influence the overall perception of bedside rounds. Nonetheless, hospitalists advocated for changes to be made to the structure of bedside rounding to ensure its position in the educational process of training physicians. Further research is needed to better analyze and optimize how this process should be addressed and employed.

Conclusion: Hospitalists perceive benefits to bedside rounds but report several barriers. This study highlights the need for innovation in the rounding methods that are efficient and effective.

25) BRAIN DOCTORS: EVALUATING A MENTAL HEALTH INITIATIVE FOR THIRD GRADE STUDENTS

Jessica Liu; Parnika Telagi; Brian Johnston, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Children raised in low socioeconomic environments can be exposed to violence and trauma, are at risk for unstable family environments, and face limited access to mental health resources. Consequently, they experience higher levels of stress, anxiety, depression, and other mental health disorders putting them at risk for behaviors like substance use, violence, and high-risk sexual behaviors. Positive relationships with parents, peers, and self as well as involvement in school and community are identified as factors that can protect youth from these behaviors and optimize wellness highlighting the need for mental health education in schools. Building upon an already established community partnership with two elementary schools in the Milwaukee area and their request for mental health education, we implemented a mental health education program that discusses emotions, mindfulness, and community wellness. This pilot study aims to evaluate the effectiveness of and student satisfaction with the mental health program.

Methods: A literature review was conducted to determine age-appropriate lesson objectives. A total of two interactive sessions were designed. Goals of the first session were 1) identifying and expressing different emotions 2) practicing mindfulness. Goals for the second session focused on 1) navigating conflicts and 2) uplifting community members. To measure the efficacy of our program, students were given assessments before and after the completion of both sessions. The pre-assessment and post-assessment aimed to identify student knowledge about emotions, their ability to recognize different emotions, their knowledge of mindfulness, and their ability to resolve conflict. Assessments were reviewed by the elementary school teachers prior to usage. An additional satisfaction survey was given to measure student enjoyment.

Results: The results of the pre- and post-session assessments showed no significant difference in the overall number of correct responses. However, there were some improvements in the knowledge of emotions and empathy ($p=0.03$ and $p=0.09$ respectively), while there was a decrease in identifying emotions and resolving conflicts ($p=0.03$ and $p=0.29$ respectively). Based on the feedback received from the student satisfaction survey, it was found that most of the students had a positive experience with the program. When asked what is one thing they learned from the sessions, 52.41% of students had responses that were related to experiencing, expressing, and managing different emotions.

Conclusion: It is encouraging that some significant gains were seen and importantly that the students indicated enthusiasm for our program. Our data reveals that the students had a higher baseline knowledge than we expected. In the future, we plan to address more complex emotional education topics to provide students with more tools to help them navigate through emotionally challenging situations. This pilot study has reinforced our hope that elementary and medical students can engage in emotional wellness education, however, in this approach, further work is needed to fine-tune the curriculum as per the students' needs.

26) A CASE PRESENTATION OF DELAYED VANCOMYCIN TOXICITY

Rachel Jones; Pooja Patel, MD
Medical College of Wisconsin, Milwaukee, WI

Background: Vancomycin (VCM) is a bactericidal antibiotic indicated for use against gram positive bacteria and commonly used as an alternative treatment for patients with β-lactam allergies1. VCM is typically prescribed for MRSA (methicillin resistant staphylococcus aureus) infections including cellulitis, endocarditis, osteomyelitis, and pneumonia, amongst other diseases. Adverse side effects to IV VCM include nephrotoxicity and infusion reactions.

Case Presentation: A 62-year-old female with PMH of DM, HTN, CAD, obesity, and lymphadenopathy presented with worsening cellulitis of lower extremities and abdominal wall. She was treated with micafungin and ertapenem two months prior. Blood and wound cultures as well as a nasal MRSA swab were collected. VCM and ceftazidime-avibactam plus aztreonam were prescribed per pharmacy protocol until cultures were analyzed.

Patient had a history of supratherapeutic VCM troughs and poor clearance of VCM despite normal renal function. Thus, pharmacy was consulted and VCM was dosed conservatively. 24hr after initial treatment, she complained of dizziness with a BP of 74/35 and HR of 50. She was given a liter of bolus with no response. Lactic acid levels were significantly elevated at 7.1, creatinine was 1.42, BUN was 27, and urine output was decreased. EKG demonstrated sinus bradycardia. Critical care was consulted, and the patient was transferred to ICU. Differential diagnosis included sepsis vs drug-induced hypotension. VCM trough was 80 mg/L. Due to AKI, VCM was discontinued, pt was switched to daptomycin, and ID was consulted.

Discussion: The onset of action for IV VCM is rapid and peak doses are achieved immediately after infusion. VCM is excreted through glomerular filtration and tubular secretion and is commonly associated with nephrotoxicity2. Therefore, therapeutic dose monitoring for VCM is important. Trough serum levels are used to monitor VCM levels, and the traditional dosing goal is 10-15 mg/L while dosing for severe infections is 15-20 mg/L3. Due to the rapid onset of VCM, adverse side effects often manifest quickly after treatment. Though uncommon, medical professionals should be ready to treat patients who slowly metabolize VCM, as their symptoms would present slower than expected and thus may be mistaken for a different disease process. Treatment for VCM induced nephrotoxicity includes discontinuation of VCM, or in severe cases, hemodialysis2. Fortunately, the discontinuation of VCM and switch to daptomycin in our patient resolved her AKI and improved her symptoms.

Bibliography:

1. Bruniera FR, Ferreira FM, Saviolli LR, Bacci MR, Feder D, da Luz Gonçalves Pedreira M, Sorgini Peterlini MA, Azzalis LA, Campos Junqueira VB, Fonseca FL. The use of vancomycin with its therapeutic and adverse effects: a review. Eur Rev Med Pharmacol Sci. 2015 Feb;19(4):694-700. PMID: 25753888.
2. Vora S. Acute renal failure due to vancomycin toxicity in the setting of unmonitored vancomycin infusion. Proc (Bayl Univ Med Cent). 2016;29(4):412-413. doi:10.1080/08998280.2016.11929491
3. Bradley N, Ng KE. Optimizing Vancomycin Efficacy and Reducing Nephrotoxicity. US Pharm. 2023;48(4):HS2-HS5.

27) TO CHECK A TSH OR NOT TO CHECK A TSH?

Samiya Karimov; Jennifer Cichon Mackinnon, MD, FACP
School of Medicine at the University of Manchester, Rusholme, United Kingdom

We report the case of a 34-year old Caucasian female (G3P1020) presenting 4 months postpartum to her routine annual physical exam with right buttock and left great toe numbness, alongside right hip pain. Due to her family history of thyroid disease and presenting symptoms of myopathy, a thyroid function test and free thyroxine blood test was ordered. To our knowledge, polyneuropathy has not been reported as a manifestation of postpartum thyroiditis (PPT), however it has been commonly associated with hypothyroidism. This case reports aims to highlight the importance of clinical judgement when ordering thyroid function testing in the post-partum period.

Post-partum thyroiditis is a well-established autoimmune reaction that occurs in the year after childbirth, affecting 1.1-16.7% of pregnancies. In the postpartum period, the maternal immune system is reconstituted.

This condition is typically described as presenting as transient thyrotoxicosis (until around 6 months postpartum) followed by hypothyroidism and then return to euthyroid (25% of all presentations by 12-18 months), however transient hyperthyroidism and transient hypothyroidism respectively make up 32% and 43% of all presentations. Some patients do not return to a euthyroid state and require long-term management of their thyroid condition.

In the initial stage of the disease, thyroid peroxidase antibodies (TPO-Ab) induce an antibody-dependant cell-mediated cytotoxicity reaction in the thyroid. Activation of the complement cascade causes an increase in IgG, NK cells, lymphocyte and HLA haplotype levels, leading to the destruction of the thyroid follicles by proteolysis. Thus, thyroxine (T4) and triiodothyronine (T3) are released into the serum blood at clinically significant levels for the diagnosis of hyperthyroidism. This stage of the condition continues until all T3 and T4 stores in the thyroid have been exhausted.

During the primary hyperthyroid stage the secretion of TSH is reflexively decreased, thereby causing a secondary state of hypothyroidism once T3 and T4 levels stores are depleted. The thyroid will return to normal once the inflammatory process has resolved.

The thyrotoxicosis stage typically clinically manifests as painless hyperthyroidism with possible palpitations, anxiety, irritability, heat intolerance and fatigue symptoms.

As the patient was 4 months postpartum, we considered if she was in the 1st thyrotoxic stage of PPT. Peripheral neuropathy as a manifestation of thyrotoxicosis would be an uncommon presentation of the condition. There are several proposed pathways leading to thyrotoxic neuropathy, these include the direct effect of elevated T3 and T4 on the nerves, antibody-mediated nerve destruction and hypermetabolic depletion of nutrients needed for neural development/maintenance.

The patient's blood tests showed elevated free Thyroxine (2.53) and low Thyroid Stimulating Hormone (<0.005). This did not reveal the cause of the polyneuropathy in this patient, instead resulted in unnecessary health anxiety and increased clinical administration hours spent.

Several possible musculoskeletal hypotheses may explain her polyneuropathy, and are more clinically likely than a thyroid disorder. Given the patient showed no true signs of hyperthyroidism 4 months postpartum, we advise against ordering a thyroid function blood test within one year after childbirth in women who are not exhibiting the classical signs of hyperthyroidism or hypothyroidism.

28) UNRAVELING THE FETAL IMMUNE RESPONSE DURING CONGENITAL CYTOMEGALOVIRUS INFECTION

Mohamed Khalil; Scott Terhune, PhD; Subramaniam Malarkannan, PhD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Congenital cytomegalovirus (cCMV) infection is the most common cause of intrauterine infection in the USA, impacting 1 in 100 live births. Cytomegalovirus (CMV) is vertically transmitted via the umbilical cord from the infected mother to the developing fetus. Although most infected newborns are asymptomatic, 10% display severe congenital anomalies, including microcephaly, sensorineural hearing loss, cerebral palsy, growth restriction, and in some cases, perinatal mortality. Among many potential factors, some studies have hinted that fetal immune immaturity may contribute to the severity cCMV, however our understanding of the developmental and functional consequences of cCMV on fetal immune cells remains limited. Natural killer (NK) cells are the first lymphocytes to develop during gestation and are required to manage CMV infections. NKG2C+ NK cells can recognize and respond to CMV-infected cells expressing HLA-E loaded with viral gpUL40 peptide. The role of fetal NK cells during cCMV is limited and the development and functions of fetal NK cells within the umbilical cord has not yet been explored.

Methods: To investigate four sets of umbilical cord blood and matching umbilical cord tissues were collected from two HCMV seropositive (HCMV+) and two HCMV seronegative (HCMV-) fetuses that did not experience any complications during gestation. These samples were provided by the Medical College of Wisconsin Tissue Bank and were processed within 24 hours following live birth. Fetal NK cells were isolated, using the BD FACSAria sorter. Following cell sorting, single-cell RNA sequencing (scRNA-seq) was performed, and cDNA libraries were constructed and sequenced via NextSeq 550. Cell Ranger was then used to algin the cDNA reads and the Seurat R package was used to analyze the transcriptional data. Cells were filtered and clustered based on the number of uniquely expressed genes.

Results: Four sets of umbilical cord blood and matching umbilical cord tissues were collected from two HCMV+ and two HCMV- fetuses. We were able to successfully sort and capture fetal NK cells and perform scRNA-seq on these samples. Following unbiased clustering, we observed and characterized five distinct fetal NK cell subsets in the umbilical cord blood and four fetal NK cell subsets in the corresponding umbilical cord tissue. Our findings revealed that HCMV+ fetal NK cells primarily consisted of mature NK cell subsets, while HCMV- fetal NK cells constituted the majority of the immature subsets. Importantly, we identified a unique subset of NKG2CHi fetal NK cells that were significantly elevated in the HCMV+ fetuses. Finally, we defined a group of transcription factors involved in the formation of antiviral fetal NK.

Significance: Here, we demonstrate that HCMV infection can induce the formation of distinct NK cell subsets and drive their unique transcriptional profiles. These findings have the potential to guide the development of an innovative NK cell immunotherapy that could help prevent fetuses from developing symptomatic cCMV.

29) EFFICACY OF NON-INVASIVE AURICULAR VAGUS NERVE STIMULATION IN ADOLESCENTS WITH DYSAUTONOMIA AND REFRACTORY GASTROINTESTINAL SYMPTOMS

Fatima Zohra Khamissi; Pippa Simpson, PhD; Katja Karrento, MD
Medical College of Wisconsin, Milwaukee, WI

Background: Patients with refractory, upper gastrointestinal (GI) tract symptoms frequently suffer from extra-intestinal symptoms concerning autonomic nervous system (ANS) dysfunction. Symptoms are frequently disabling and dismissed as psychiatric disease due to lack of recognition of multi-system pathology and absence of targeted therapies. We hypothesize that non-invasive technologies, such as percutaneous electrical nerve field stimulation (PENFS) improves symptoms in these patients by modulating the ANS through stimulation of afferent vagal pathways in the external ear. Vagal neuromodulation aims to strengthen a weak afferent pathway, resulting in multi-system symptom improvement. Our aim was to explore the potential benefit of PENFS in reducing GI and extra-intestinal symptoms in a cohort of adolescents with ANS dysfunction.

Methods: Prospective, open-label study enrolling adolescent females ages 10-18 years with GI complaints and autonomic dysfunction along with joint hypermobility concerning for hypermobile Ehlers-Danlos Syndrome (hEDS). Participants underwent weekly, non-invasive neurostimulation therapy using auricular percutaneous electrical nerve field stimulation (PENFS) x 6 consecutive weeks. All subjects completed weekly and pre- and post-therapy symptoms surveys assessing upper GI/post-prandial symptoms (PAGI-SYM), autonomic symptoms (Body Perception Questionnaire; BPQ), and multi-system comorbidities (Children's Somatization Inventory; CSI). Subjects were categorized by disease severity and medication burden (mild/moderate/severe) based on number of comorbidities and prescription medications.

Results: 52 subjects were enrolled with 45 females of mean (SD) age 16 (1.8) years included in the final analyses. 32% and 39% met criteria for hEDS and Hypermobile Spectrum Disorder (HSD) respectively while the rest were diagnosed with local joint hypermobility. Most subjects reported extra-intestinal comorbidities: dizziness (100%), cognitive impairment/concentration difficulties (87%), sleep disturbances (78%), migraine (67%) and moderate-severe psychiatric disease (58%). Patients with hEDS and HSD were more likely to suffer from greater number of comorbidities ($p=0.019$). Specific characteristics more common in subjects with moderate-severe disease burden included recurrent syncope, ($p=0.005$), joint hypermobility ($p=0.009$) and psychiatric disease ($p=0.034$). 73% had clinical suspicion for gastroparesis and 22% required enteral tube feeding support. Median (IQR) upper GI symptom scores (PAGI-SYM) improved with PENFS therapy: 39.0 (30.0-50.5) from baseline to 25.0 at end of therapy ($p<0.001$). CSI scores have improved significantly from 42.0 (32.0-52.0) to 31.0 (21.0-39.5), ($p<0.001$). Supra diaphragmatic body perception improved from 57.1 (51.6-60.8) to 53.8 (49.1-58.6), ($p<0.05$). Sub diaphragmatic body perception improved from 60.7 (53.5-64.2) to 56.6 (47.6-63.1), ($p<0.05$). Body awareness scores did not change significantly with PENFS therapy.

Conclusion: This complex cohort of adolescent females with primary gastrointestinal complaints and underlying ANS dysfunction suffer from a high disease burden as indicated by substantial extra-intestinal comorbidities. Despite their significant complexity, a substantial proportion demonstrate symptom improvement with auricular neurostimulation targeting the underlying autonomic imbalance/vagal dysfunction.

30) THE SILENT STORM: UNMASKING HLH IN AN ELDERLY PATIENT WITH T-CELL LYMPHOMA

Sechme Khan; Eduard Matkovic, MD; Ran Tao, MD
Federal Medical and Dental College

Background: Hemophagocytic lymphohistiocytosis (HLH) is a rare and often fatal hyperinflammatory disorder that can be brought on by a number of underlying illnesses. Among them, malignancy (particularly lymphoma) and infection (especially EBV) are the most common triggers in adults. Activated macrophages and lymphocytes are assumed to be the origin of the hyperinflammatory/dysregulated immunological state when normal downregulation is absent. Here, we described a case of HLH associated with T-cell lymphoma in an elderly patient.

Case Presentation: Our clinical case involved a fairly healthy 86-year-old female with past medical history of melanoma s/p excision, microscopic colitis, hypertension, GERD, hyperlipidemia and anxiety who presented to the Emergency Department at the University of Wisconsin Hospital with a 2-week history of shaking chills and night sweats. At baseline, the patient was able to perform ADLs and IADLs and lived independently. Physical examination was largely unremarkable except mild abdominal tenderness and distension. Laboratory tests showed pancytopenia (WBC 1.6 K/uL, Hgb 9, Plt 31K at the time of admission), largely normal BMP (Cr 0.74), LFT abnormalities (AST 394, ALT 538, ALP 947, T bili 3.8), and increased inflammatory markers. CT showed new hepatosplenomegaly (spleen measuring up to 15 cm from 10 cm, 23 days ago). Further evaluation during the hospital stay showed a rising ferritin 4,092 -> 24,670 ng/mL, worsening fibrinogen 264 -> 86 mg/dl, and an elevated IL-2 level. Thus, the patient met 5 out of the 8 HLH-2004 diagnostic criteria with an HScore of 283. To evaluate the cause of HLH, an extensive testing for infectious conditions, including viral, bacterial, fungal, and tick-borne disease returned negative except positive EBV ab with an EBV quantitative PCR of 3,311 IU/mL. A broad rheumatologic evaluation was negative except a chronically elevated ANA with a titer of 1:320. Finally, a bone marrow biopsy was performed and demonstrated hemophagocytosis and an atypical T cell population consistent with T-cell lymphoma. Thus, a diagnosis of HLH secondary to T cell lymphoma was made. Unfortunately, the patient had progressive acute kidney injury (AKI), metabolic encephalopathy, and hepatic dysfunction while hospitalized. Dexamethasone was initiated as an empirical treatment for HLH without appreciable effect. Without treating the underlying T-cell lymphoma, HLH was likely to progress further; and her performance status precluded aggressive multi-agent chemotherapy. Given the poor prognosis, the patient and her family opted for comfort-focused care.

Conclusion: Hemophagocytic lymphohistiocytosis (HLH) represents an uncommon yet potentially devastating complication of hematologic malignancies. This clinical case highlights the importance of multidisciplinary evaluation when confronted with a case like this to not only reach the diagnosis of HLH, but also evaluate the underlying causes. Early hematology referral is crucial. Ultimately, the management of HLH depends on aggressive management early and treatment of underlying drivers of HLH in these complex clinical scenarios.

31) GORHAM-STOUT DISEASE: A CASE REVIEWING THE PHANTOM BONE DISEASE

Emily Kind
Medical College of Wisconsin, Milwaukee, WI

INTRODUCTION: Gorham-Stout disease (GSD) is a rare bone disorder that is characterized by idiopathic osteolysis along with lymphatic and vascular proliferation (1). Roughly 350 cases of this disease have been reported (1,2). The uncommon nature of this disease, combined with its non-specific presentation, makes its diagnosis particularly difficult. The etiopathogenesis remains unknown. The following case reviews the diagnosis and outcomes of this rare disorder.

CASE: A 27-year-old female with a PMH of hidradenitis suppurativa, gestational diabetes, asthma and migraines presented to her PCP during her second trimester with a chief complaint of right foot pain and edema, which was initially attributed to pregnancy. Her pain continued to progress several months after delivery, prompting an x-ray which demonstrated 4th and 5th metatarsal erosion thought to be consistent with osteomyelitis. Subsequently, a bone biopsy was performed. Cultures were unrevealing with no growth demonstrated. A six-week course of ertapenem was completed with no improvement of symptoms and repeat X-ray showed progression of erosive changes. A 4-week trial of steroids was then attempted, also unsuccessful in improving her symptoms. Her work up to this point had been negative for endocrine, malignant, infectious and autoimmune etiologies. Due to the uncertain etiology driving her bone loss and suspicion for chronic recurrent multifocal osteomyelitis, the patient was initiated on adalimumab. Shortly after, she was admitted for extreme right foot pain. During this workup, both CBC and CMP were unremarkable. ESR and CRP were elevated at this time. X-ray and MRI were repeated, demonstrating progression of osteolytic lesions. However, the MRI also revealed potential lymphovascular malformation and angiomatosis proliferation. Bone biopsy was also repeated during her hospitalization. Histology with D2-40 marker confirmed lymphatic involvement, consistent with a GSD diagnosis. Patient was initiated on zoledronic acid and sirolimus therapy. Follow up imaging has since shown no progression of bone loss.

DISCUSSION: Multiple etiologies exist for radiologic evidenced bone loss including infection, endocrine disorders, metabolic disorders, immunologic disorders and malignancy. To diagnose GSD, it is essential these etiologies are investigated and ruled out. In addition to radiologic workup demonstrating osteolysis, histology revealing angiogenesis or lymphangiogenesis is warranted to reach this diagnosis (1, 2). There is currently no uniform treatment protocol for GSD. Surgical therapy, radiotherapy and pharmacological therapy have been explored for the management of GSD (1, 2). Surgery is employed to help address complications, treat pathological fractures or remove the bone segment when applicable. Radiotherapy has demonstrated promising control of local disease, likely through halting angiogenesis and lymphoangiogenesis. However, radiotherapy carries a theoretical risk of inducing secondary malignancy. Numerous pharmacological agents have been trialed, the most promising of which include bisphosphonates, sirolimus and interferon α-2b (2). Treatment typically results in bone stabilization with no osteogenesis, however both progression of bone loss or bone formation can also occur (1, 2, 3).

32) NOT JUST ANY RASH: A CASE OF CLINICALLY AMYOPATHIC DERMATOMYOSITIS

Annie Kleynerman; Rivka Franklin, MD; Devin Madenberg, DO, FACP
Medical College of Wisconsin, Milwaukee, WI

Introduction: Dermatomyositis (DM) is an immune-mediated myopathy characterized by proximal skeletal muscle inflammation and weakness, and classic skin findings of Gottron papules, heliotrope rash and shawl sign. The condition is relatively uncommon with an estimated incidence of 0.5 per 100,000 person-years. Clinically amyopathic dermatomyositis (CADM) is a variant of DM characterized by the absence of muscle weakness in the setting of classic cutaneous manifestations. Approximately 5-20% of DM patients have the amyopathic form. As DM is associated with malignancy in up to 25% of patients and can increase risk for other conditions such as interstitial lung disease, obtaining a correct diagnosis is essential.

Case: A 43-year-old female with a past medical history of asthma, eczema, and obesity presented with complaints of multiple joint pains and progressive hand ulcerations. Patient had been recently diagnosed with seronegative polyarthritis and started on methotrexate, yet symptoms worsened, prompting direct admission. Patient also reported having increased hair loss and recurrent oral ulcerations. Vitals were unremarkable. Physical examination revealed a subtle erythematous rash involving the upper eyelids, cheeks, and upper chest. Her hands revealed multiple areas of fingertip desquamation, splinter hemorrhage, areas of violaceous erythema and ulceration over several dorsal metacarpophalangeal joints, and several areas of painful erythema within the ventral creases of her fingers. Additionally, she had a violaceous macular rash on the extensor surface of her right elbow. Initial labs revealed an unremarkable complete blood count and comprehensive metabolic panel. Creatine Kinase and aldolase levels were within normal limits. ANA, ANCA, dsDNA, RF, cryoglobulins, SPEP/UPEP were negative. Dermatology performed a punch biopsy of her elbow ulceration that showed vascular thrombosis without vessel inflammation. Hypercoagulable labs were unremarkable. A myositis panel was highly positive for anti-MDA5, confirming the diagnosis of MDA5-associated clinically amyopathic dermatomyositis. Age-appropriate cancer screening was up to date and a CT chest/abdomen/pelvis was negative. The patient was started on IVIG, prednisone, and mycophenolate. She improved clinically and was discharged.

Discussion: This case of Clinically Amyopathic Dermatomyositis (CADM) illustrates the multidisciplinary approach needed to correctly identify and diagnose this disease. As implied in the name, dermatomyositis (DM) is classically known to have muscle involvement, with elevated creatine kinase and/or aldolase. However, when muscle involvement is absent, DM can be overlooked. Cutaneous manifestations are sometimes subtle and not overtly recognized. Facial erythema can mimic malar erythema seen in lupus. Different than Gottron papules, Gottron sign can occur as violaceous macules/patches on extensor surfaces of elbows and knees, as seen in our patient. The subset of DM, MDA5-associated DM, can present with other less common findings of erythematous, painful palmar macules and papules over finger creases and palms, oral ulcers, nonscarring alopecia, and arthritis. MDA5-associated DM also has a lower incidence of myositis. Unfortunately, this subset of DM is also associated with an increased risk for a rapidly progressive form of interstitial lung disease. Given the association of all forms of DM with malignancy and interstitial lung disease, it is important to be able to recognize the various presentations of this condition.

33) AN UNUSUAL CASE OF LATE-ONSET DERMATOMYOSITIS IN A PATIENT WITH CUTANEOUS T-CELL LYMPHOMA

Divya Kodali; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

INTRODUCTION: Dermatomyositis (DM) is an immune-mediated disorder characterized by proximal muscle weakness and muscle inflammation, with a percentage of cases presenting with cutaneous manifestations. Patients with dermatomyositis are at an increased risk of malignancy, and some subtypes present with interstitial lung disease (ILD), inflammatory arthritis, dysphagia and other signs and symptoms.

CASE DESCRIPTION: A 80 year-old man with a history of second degree AV block, bilateral glaucoma with low vision in the right eye, hypertension, hyperlipidemia, coronary artery disease (atorvastatin 80 mg on same dosage for 2 years), degenerative joint disease, and recently diagnosed cutaneous T-cell lymphoma (that responded well to topical corticosteroids) presented to the ED with two weeks of generalized weakness, difficulty standing from a sitting position, and decreased ability to raise arms overhead. He was also noted to have recent weight loss, decreased oral intake, and recent polyarticular inflammatory arthritis (affecting bilateral hands with second through fourth PIP synovitis and right knee effusion).

Initial workup on admission was remarkable for elevated transaminases and low albumin. Further workup revealed an elevated creatine kinase (CK 5900), normal GGT, positive anti-isoleucyl-transfer RNA synthetase (anti-OJ) antibodies, and positive ribonucleoprotein (RNP) antibodies. Physical exam was remarkable for generalized weakness with particularly decreased strength in bilateral hip flexors and shoulders. The patient was started on intravenous fluids and liver ultrasound was unremarkable. No evidence of ILD was found on imaging. Pathology from skin biopsy was suspicious for dermatomyositis, and electromyography (EMG) showed evidence of inflammatory myopathy. He was started on daily Prednisone and was treated with IVIG for four days. Muscle biopsy was found to have severe, highly active yet chronic inflammatory myopathy having some features of dermatomyositis, as well as profound, preferential type-2 atrophy. Throughout his 16-day admission and with treatment with steroids and IVIG, the patient's CK levels were down trending. He was discharged to inpatient rehabilitation at that time and was later discharged to home after 21 days.

DISCUSSION: Here we report a case in which the patient has clinical signs and symptoms of proximal muscle weakness, as well as inflammatory arthritis, elevated creatine kinase (CK), transaminases, positive anti-OJ and anti-RNP antibodies and pathology/EMG showing features of dermatomyositis and inflammatory myopathy. Although there have been six cases in the literature of T-cell lymphoma in DM patients, this case is unique in that the age of the patient at diagnosis of DM was 80. Usually, DM occurs in children ages 5-15 and adults aged 40-60. DM also tends to affect females over males. Goals of treatment for DM include improving muscle strength, which for mild disease includes the use of systemic glucocorticoids such as prednisone and convention synthetic disease-modifying anti-rheumatic drugs (csDMARDs) such as azathioprine, methotrexate, or mycophenolate. For more severe disease, intravenous immunoglobulin for 2-5 days, followed by prednisone 1mg/kg daily (max of 80mg), which was recommended for this case. This case highlights the importance of increased awareness in clinicians for elderly patients coming in with generalized weakness, who have a previous diagnosis of T-cell lymphoma.

34) A CASE OF ALLOPURINOL-INDUCED DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS) IN A PATIENT WITH POLYCYSTIC KIDNEY DISEASE AND CKD IV

Emily Koller; Neil Dixit; Remy Lee, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Drug rash with eosinophilia and systemic symptoms (DRESS) syndrome is a severe drug hypersensitivity reaction characterized by an extensive, often pruritic rash, fevers, lymphadenopathy, peripheral eosinophilia, and internal organ damage that may affect the kidneys, liver, pancreas, heart, lungs and eyes. DRESS typically manifests two to eight weeks after initiating treatment with an offending drug, often an aromatic anticonvulsant, sulfonamide, or allopurinol. The existing literature on the course of DRESS syndrome in patients with pre-existing kidney dysfunction is limited.

Case: A 59 year old male with history of CKD IV, PCKD, HTN, hyperuricemia on Allopurinol presented to a routine Nephrology follow-up appointment where he was noted to be febrile with an extensive pruritic, erythematous papular rash on the trunk and extremities. Lab work obtained in anticipation of Nephrology appointment showed elevated creatinine from baseline elevation, as well as eosinophilia. Patient reported the rash developed two weeks prior on his left axilla, and over the course of 2-3 days spread to the majority of his body, sparing his palms, soles, face, and oral mucosa. He endorsed low grade fever and chills coinciding with the onset of rash. The patient sought evaluation at Urgent Care on two separate occasions and was prescribed Kenalog and Terbinafine, which seemed to worsen the rash. Nephrology referred the patient to an urgent Dermatology appointment where a punch biopsy was obtained and further blood work was ordered. Dermatologic exam was notable for fever, rash distributed over >80% body surface area, and no lymphadenopathy. Later that evening, liver function tests and lipase returned significantly elevated and the patient was directed to go to the Emergency Department immediately with concern for severe DRESS with acute-on-chronic kidney failure, liver failure, and pancreatic involvement. This constellation of physical exam and lab findings fit criteria for the diagnosis of DRESS syndrome and the patient was admitted for further workup and treatment; RegiSCAR score of 6 on admission indicated a definite case of DRESS. Treatment was initiated immediately with oral prednisone and clobetasol ointment. His liver enzymes, kidney function and dermatitis rapidly improved and he was discharged home after two days with a plan for close follow-up with both Dermatology and Nephrology.

Discussion: Here we report a case of DRESS syndrome in a patient with CKD IV from PCKD who presented six weeks after initiating allopurinol for the treatment of hyperuricemia. DRESS syndrome has been reported in 0.4% of patients taking allopurinol as a uric acid lowering agent. While the incidence of DRESS is low, mortality rate is around 10%. The utmost care should be taken to quickly identify DRESS, stop the offending agent, and initiate treatment of systemic corticosteroids to prevent long term morbidity and mortality. Furthermore, patient counseling should emphasize the importance of follow up to identify and treat potential long term sequelae, including thyroiditis and cardiac disease.

35) RECURRENT INFLAMMATORY REACTION TO LARYNGEAL HYALURONIC ACID INJECTION

Hannah Kreuser; Ruth J. Davis, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Vocal fold injection augmentation with hyaluronic acid (HA) fillers is a common treatment for glottic insufficiency. While generally well-tolerated, rare inflammatory reactions can occur in 3-5% of patients. All reactions reported in the literature were resolved after treatment with corticosteroids. This case report describes a patient with left vocal fold immobility who experienced recurrent inflammatory reactions following laryngeal HA injection. Initial corticosteroid treatment provided resolution of symptoms, however 2 weeks later the patient developed recurrent laryngeal edema, necessitating hyaluronidase injection to dissolve residual HA. This intervention prevented further reactions. This case highlights the potential for recurrent inflammatory reactions following HA injection and the potential role of hyaluronidase in managing such complications.

36) NOT SO MINIMAL CHANGES: A CASE OF TREATMENT RESISTANT NEPHROTIC SYNDROME

Anna Kreynin; Geralyn Palmer, MD; Maryam Zamanian, MD, MS
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Nephrotic syndrome (NS) is characterized by proteinuria and hypoalbuminemia with periorbital and peripheral edema. Focal segmental glomerulosclerosis (FSGS) is a common cause of primary NS among adults, and minimal change disease (MCD) is most common in children. On tissue pathology, MCD is characterized by complete epithelial foot process effacement, while primary FSGS requires the additional finding of segmental glomerulosclerosis. In both conditions, prolonged corticosteroid therapy is the preferred initial treatment, with FSGS responding to treatment in 50% of patients. Here is a case of NS complicated by adverse events related to frailty and corticosteroid therapy.

Case Description: A 74-year-old female with stage III chronic kidney disease, history of Takotsubo cardiomyopathy, and chronic infection of the hip on long-term Bactrim presented with a one-month history of fatigue, anorexia, and headache and a one-week history of lower extremity (LE) edema without dyspnea or orthopnea. In the emergency department (ED), her blood pressure was 161/83 and exam was notable for significant bilateral LE edema. Laboratory evaluation demonstrated a creatinine of 4.73 mg/dL from a baseline of 1.3 mg/dL, a serum albumin of 2.1 g/dL, and a B-type natriuretic peptide (BNP) of 1,123 pg/dL. Chest x-ray revealed a small left pleural effusion.

Differential diagnosis for the patient's acute kidney injury and hypervolemia included acute heart failure with cardiorenal syndrome, nephrotic syndrome, and interstitial nephritis. Renal ultrasound was performed without hydronephrosis, TTE revealed a left ventricular ejection fraction of 70%, and urine protein/creatinine ratio was 17.41 mg/mg. Her nephrotic-range proteinuria (> 3.5 mg/mg) and hypoalbuminemia confirmed NS. A workup for primary and secondary etiologies was pursued, including hemoglobin A1C, HIV screen, hepatitis B and C serology, ANA, anti-PLA2R and anti-THSD7 antibodies, cryoglobulins, C3 and C4 levels, a treponemal test, MPO and PR3 antibodies, immunoglobulin levels, and serum protein electrophoresis (SPEP), all of which were unremarkable. Prompt kidney biopsy demonstrated foot process effacement that was initially thought to represent MCD. She was discharged on a prolonged prednisone taper and apixaban given the elevated risk of thrombosis in NS.

One month later, she returned to the ED in septic shock with ongoing LE edema and diffuse LE wounds, a serious complication of her frailty and long-term corticosteroid therapy. Re-evaluation of renal pathology revealed segmental glomerulosclerosis in addition to foot process effacement, consistent with primary FSGS. Her course was further complicated by worsening renal failure, newly diagnosed atrial fibrillation, a gastrointestinal bleed, and bilateral renal infarcts. She eventually required dialysis, and later opted for hospice care, passing away three months after initial presentation.

Discussion: This case demonstrates the importance of early diagnosis in patients presenting with NS, while highlighting potential complications of long-term corticosteroid therapy. Although MCD and FSGS are often regarded as distinct entities, they share similarities in clinical and pathological presentations, and focally affected lesions may be missed in FSGS, leading to misdiagnosis. This case underscores the necessity for further research into the relationship between MCD and FSGS and the development of effective, low-risk treatment options for patients at high risk of serious adverse events.

37) TICK-BORNE RELAPSING FEVER IN WISCONSIN: A CASE REPORT

Manlu Liu; Michael Rockman, MD, PhD; Jordan Kenik, MD, MPH
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Tick-borne relapsing fever (TBRF) is a zoonotic infection caused by members of the Borrelia genus of spirochetes, predominantly found in the southwestern United States. This case report describes an instance of TBRF identified in Madison, Wisconsin, highlighting the importance of considering this diagnosis even in non-endemic areas.

Case Presentation: A 65-year-old woman presents to a Wisconsin emergency department with a two-day history of fevers and altered mental status after returning from a five-week stay in Colorado. After returning to Wisconsin, she developed subjective fevers and urinary incontinence in addition to neurological concerns such as confusion, forgetfulness, and difficulty completing tasks. She also noted multiple insect bites of unclear source. On presentation, the patient was febrile (38.8°C), and physical exam showed a small, erythematous lesion on her right thigh. Laboratory findings were notable for elevated transaminases, thrombocytopenia, mild hyponatremia, mild hypokalemia, and elevated procalcitonin. Imaging studies included computed tomography (CT) head to rule out structural causes and chest X-ray and CT abdomen/pelvis to evaluate for sources of infection -- all of which were unremarkable.

The patient was started on cefepime and vancomycin and then admitted to the inpatient general medicine service. A peripheral blood smear was sent for review, and the patient was empirically treated with doxycycline given the high concern for tick-associated pathology. The patient clinically worsened overnight, with mild tachycardia and hypotension refractory to fluid resuscitation. The peripheral blood smear revealed the presence of spirochetes, leading to a presumptive diagnosis of TBRF. The patient was then transitioned to ceftriaxone and doxycycline. Relapsing fever Borrelia species polymerase chain reaction (PCR) was positive, confirming the diagnosis five days after presentation.

The patient's neurological status improved rapidly with antibiotics, and after an overnight hospital stay, she was discharged with a 10-day course of oral doxycycline. At discharge, abnormal liver function tests and thrombocytopenia had improved. A follow-up visit in primary care clinic a few days later showed a near-complete resolution of symptoms and normalization of labs.

Discussion: Here, we describe a case of TBRF in the nonendemic region of Wisconsin. TBRF can present with many non-specific symptoms; the most prevalent of these is relapsing fever, which is estimated to occur in nearly 100% of cases. Other common symptoms include headache, myalgias, nausea/vomiting, and chills. The mechanism of neurologic involvement is unknown but thought to be indirectly related to fevers and spirochetemia, rather than direct central nervous system involvement. Recent travel to the southwestern United States, the presence of ticks, and cabin exposure are notable risk factors for TBRF. The case highlights the importance of empiric treatment in cases of suspected tick-borne disease. Peripheral blood smear examination during febrile episodes can provide a quick and accurate diagnosis. PCR is the most sensitive test but is expensive and more time-intensive. Early consideration of TBRF, even in non-endemic regions, is essential for prompt diagnosis and treatment.

38) POST-PRANDIAL HYPOGLYCEMIA AFTER GASTRIC BYPASS: DIAGNOSTIC CHALLENGES IN A PATIENT WITH MULTIPLE RISK FACTORS

Manlu Liu; Rachel Wilson, DO; Maxfield P. Flynn, MD, PhD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Post-prandial hypoglycemia is a complication of Roux-en-Y gastric bypass (RYGB) surgery, with an incidence of 13.3% within 5 years after surgery. Severe hypoglycemic episodes (blood glucose < 40 mg/dL) are rare. We present a case of severe post-prandial hypoglycemia diagnosed more than 20 years after RYGB surgery in a patient with a complex past medical history, highlighting the importance of careful evaluation to identify the underlying cause.

Case presentation: A 47-year-old female with a past medical history significant for alcohol-associated cirrhosis with recurrent admissions for hepatic encephalopathy, chronic pancytopenia, remote history of RYGB (2002), and polysubstance use disorder presented to our university-based emergency department with altered mental status and hypoglycemia. She presented to the emergency department a few hours after leaving against medical advice from a 41-day hospitalization at an outside hospital for hepatic encephalopathy and hypoglycemia. In our emergency department, her initial blood glucose was 35 mg/dL. She was given oral dextrose, and a D10 intravenous infusion was started, which improved her blood glucose to 170 mg/dL. A prior CT taken from the outside hospital showed a stable 1.1cm hypodense pancreatic lesion concerning for insulinoma. She was admitted to an inpatient general medicine service and was continued on a D10 infusion. Endocrinology was consulted and initiated a 72-hour hypoglycemic fasting protocol. Her blood glucose remained stable (90-100 mg/dL range) during the fast with mild ketosis near the end. After the fasting protocol was completed, she had two episodes of documented post-prandial hypoglycemia in response to the consumption of carbohydrates in food. A sulfonylurea screening test and anti-insulin antibodies were negative.

The patient was diagnosed with post-prandial hypoglycemia in the context of her prior RYGB. The patient met with a dietician while inpatient and was counseled on the importance of maintaining a low carbohydrate diet with low glycemic index foods. Adding acarbose was discussed but the patient preferred to try lifestyle modifications first given the gastrointestinal side effects of acarbose. She was discharged with primary care provider and nutrition clinic follow-up.

Discussion: Post-prandial hypoglycemia following RYGB presents > 1.5 hours after eating, and symptoms include palpitations, sweating, weakness, confusion, and syncope. The syndrome usually occurs 1.5-8 years after surgery and is due to the fast absorption of simple carbohydrates in the jejunum, resulting in excessive insulin response. Treatment involves primarily dietary modifications (elimination of simple carbohydrates and high-fiber meals) and alpha-glucosidase inhibitors, but other medical therapy includes somatostatin analogs, diazoxide, calcium channel blockers, and glucagon-like-peptide-1 receptor agonists.

Our case highlights the importance of carefully evaluating refractory and severe hypoglycemia in a patient with multiple risk factors. Her history of hepatic encephalopathy made it difficult to evaluate whether her altered mental status was due to hypoglycemia. The incidental pancreatic lesion and the long interval since her RYGB surgery also complicated the diagnosis. When the cause of severe hypoglycemia is unclear, an endocrinology fasting protocol can be initiated to determine the source.

39) PROPHYLAXIS AGAINST PNEUMOCYSTIS JEROVECII PNEUMONIA FOR PATIENTS WITH SYSTEMIC AUTOIMMUNE DISEASES: ANALYSIS OF THE VETERANS AFFAIRS DATABASE

Karolina Lungova; Katherine Sherman; Michael Putman, MD
Medical College of Wisconsin, Milwaukee, WI

Background/Purpose: Pneumocystis jirovecii Pneumonia (PJP) is an opportunistic infection that may affect immunocompromised patients. PJP prophylaxis has been recommended for some autoimmune diseases but not others. The purpose of this study was to use the electronic health records from the National Veterans Affairs database to examine the incidence of PJP and PJP prophylaxis-related adverse events among patients with ANCA-associated vasculitis (AAV), systemic lupus erythematosus (SLE), immune-mediated inflammatory myopathies (IIM), and giant cell arteritis (GCA).

Methods: We performed a retrospective cohort analysis utilizing the VA database. Patients were required to have a diagnosis code for SLE (ICD-9-CM 710.0, ICD-10-CM M31.1x), AAV (ICD-9-CM 446.[04], ICD-10-CM M30.[01], M31.3[01], M31.7), GCA (ICD-9-CM 446.5, ICD-10-CM M31.[56]), or myositis (ICD-9-CM 359.71, ICD-10CM M33.[129], M60.[89]x) as well as the following: ≥ 2 inpatient or outpatient encounters, ≥ 2 rheumatology visits during the study period, and ≥20mg/day of prednisone for at least 30 days within 30 days following their first rheumatology encounter, which was defined as the index date. Patients were stratified by disease and whether they received PJP prophylaxis, which was defined as any prescription for an antibiotic to treat PJP within 30 days of the index date. PJP infection was defined by any diagnostic code for PJP and was assessed over the first 6 and 12 months of therapy. PJP prophylaxis related adverse events were also collected and included the following: adverse drug reaction (ICD9 995.0, 995.20, ICD10 T50.905A), rash (ICD9 781.1, ICD10 R21.x), methemoglobinemia (ICD9 289.7, ICD10 D74.9), nephropathy (ICD9 58[0346].x, ICD10 N17.x), hemolytic anemia (ICD9 283.9, ICD10 D59.9), or neutropenia (ICD9 288.0[39], ICD10 D70.[89]). Adjusted odds ratios (OR) for adverse events commonly associated with PJP prophylaxis were estimated using stepwise logistic regression.

Results: A total of 1042 patients were identified with a mean age of 63.4 years, the majority of whom had GCA (50.77% and were male (87.43%) and white (66.79%). The most common PJP prophylaxis was trimethoprim/sulfamethoxazole (12.67%). Eight patients were diagnosed with PJP by diagnostic codes (6-month incidence 15.73 per 1000 patient-years (py), 12-month incidence 7.78 per 1000 py), including 3 with AAV (6-month incidence 44.31 per 1,000 py, 12-month incidence 21.87 per 1,000 py), 4 with GCA (6-month incidence 15.45 per 1,000 person-years, 12-month incidence 7.66 per 1,000 py), and one with myositis (6-month incidence 9.55 per 1,000 py, 12-month incidence 4.73 per 1,000 py). After adjusting for sex, race, CCI, and medications prescribed before induction therapy, the odds of experiencing an adverse event were three-fold higher among those who received prophylaxis (OR 3.1, 95% CI 1.81-5.35).

Conclusions: In a large study of patients in the VA database with AAV, GCA, IIM, or SLE, the incidence of PJP was low. Patients with AAV had the highest incidence of PJP and prophylaxis was associated with adverse events. Additional analysis using laboratory data and a direct review of patient charts will be conducted.

40) THE HEART OF IMPLICIT BIAS

Ashley Maggia; Keegan Reilly; Laura Zakowski, MD, FACP
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Subacute bacterial endocarditis (SBE) risk factors include age over 60, male sex, injection drug use, poor dentition, structural heart, valvular, or congenital heart disease, history of infective endocarditis, presence of an IED, and chronic hemodialysis. Our patient is young and healthy with an atypical presentation of SBE. There may have been delay in her treatment due to causal oversimplification, occurring when a complex issue is simplified by assuming there is only one cause for an event, and implicit bias, when subconscious beliefs due to prior influences impact future decisions.

Case Description: A 40 year old previously healthy female who is an avid runner and occasionally smokes cigarettes presented with two weeks of progressive fatigue, shortness of breath, cough, wheezing, night sweats, and weight loss. She had milder, similar symptoms 3 months prior, was seen in urgent care, and diagnosed with a viral URI. Abnormal labs were mild anemia and urine protein and hemoglobin without infection. One month later, she was seen for a physical exam and was asymptomatic. At the current visit, she was afebrile, normal O2 sat, with a new, prominent, 3/6 systolic heart murmur. Abnormal labs were stable anemia, CRP 6.8, ESR 69, Alb 2.4, D-dimer 1.32. Urinalysis was similar. CXR was normal. Blood cultures and a transthoracic echocardiogram were ordered.

She was called 2 days later when a blood culture grew GNRs. She was sent to the ED, where according to the patient, she was told that she looked too healthy to have a significant infection. She was admitted and TEE showed destruction of A1 and P1, leaflet perforation, flail segments, valvular vegetations, "torrential" mitral regurgitation, and an incidental secundum type ASD with a small-sized left to right shunt. Blood cultures grew Haemophilus parainfluenzae. Retrospectively, the team learned she had a routine dental cleaning about 4 months prior. She was treated with ceftriaxone for 6 weeks and had a mitral valve repair with partial resection of A1 and P1 with commissuroplasty and PFO repair.

Discussion: Haemophilus parainfluenzae, found in the respiratory tract, is an uncommon cause of bacteremia, though it is the most common Haemophilus species causing endocarditis. In patients with fever, chills, anorexia, and weight loss, endocarditis should be suspected. Additional symptoms include malaise, headaches, myalgias, arthralgias, night sweats, abdominal pain and dyspnea. Delay in diagnosis and treatment may be associated with complications including valvular regurgitation, heart failure, embolic events, and sepsis. It is critical to have a high index of suspicion for patients with non-specific symptoms.

Conclusion: Patients presenting with SBE may be afebrile and appear healthy. It is important to consider SBE when a patient presents with non-specific findings, to reduce the morbidity and mortality associated with delays in diagnosis. Given that this patient was afebrile, young, and seemingly healthy, implicit bias and causal oversimplification may have delayed her diagnosis, and awareness and acknowledgement of personal biases and individualizing each patient's care can lessen the impact of these factors.

41) YELLOW NAIL SYNDROME: A CASE REPORT

Hanna Mallien; Adam Carpenter; Delaine Anderson
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Yellow Nail Syndrome (YNS) is a rare pulmonary-cutaneous condition that presents with a triad of yellow thickened nails, lymphedema, and chronic respiratory symptoms. YNS is likely an acquired condition due to dysfunction in lymphatic drainage. The prevalence of this syndrome is less than 1 in 1,000,000 and generally occurs in adults between the sixth and eighth decades. There is no difference in prevalence between sexes. There are no current treatment guidelines, although around 30% of patients have spontaneous resolution. Most treatment options are symptomatic.

Case report: A 78-year-old female presented with respiratory failure and was found to have bilateral pleural effusions in January 2023. Her past medical history was notable for congestive heart failure, B-cell lymphoma, post-polio syndrome, obesity, obstructive sleep apnea, and atrial fibrillation. She underwent a bilateral thoracentesis with orange transudative fluid drainage from each side, for a total of 1200 milliliters. Because of an elevated BNP and physical exam findings suggesting congestive heart failure, she was discharged with diuretic therapy.

Three months later she was seen due to worsening dyspnea and lower limb lymphedema; chest x-ray again showed bilateral pleural effusions. Multiple thoracenteses were performed over the following six months, each individual lobe withdrawal containing more than one liter. These recurrences resulted in placement of a permanent catheter and talc pleurodesis. Despite that, effusions eventually recurred and further thoracenteses were performed. During one hospital visit, it was noted incidentally that the patient had brittle nails. After a thoracentesis in March 2024, laboratory findings of milky orange pleural fluid with a triglyceride level of 157 mg/dL confirmed the diagnosis of chylothorax. This recurrent finding, in combination with the patient's lymphedema and brittle nails, suggests a case of Yellow Nail Syndrome.

Discussion: Due to the lack of large-scale studies, there are no current treatment guidelines. YNS can resolve in a few months without treatment or, when it is a paraneoplastic syndrome, after cancer therapy. The prognosis of YNS is generally favorable. No deaths directly attributed to YNS have been reported, although it has been shown that patients with YNS have a reduced life expectancy compared to the general population. Although it usually occurs in isolation, it can be linked to other conditions that affect the lymphatic system, autoimmune diseases, or cancers. Treatment for YNS is primarily symptomatic, targeting each component: nail discoloration, lung/sinus symptoms and lymphedema. Treatment with vitamin E, often prescribed to treat nail discoloration, may provide partial or complete relief. As YNS is considered a rare disease, there are many financial and logistical barriers to performing adequate research for treatment. It is crucial to develop strategies to support clinicians in recognizing and treating this rare and underdiagnosed disease.

42) ASTHMA? OR A MORE SINISTER 'MIMIC'? - HIGHLIGHTING THE IMPORTANCE OF A BROAD DIAGNOSTIC APPROACH

Clara Martin; Mannat Gill, MD
Medical College of Wisconsin, Milwaukee, WI

Rheumatologic conditions can present with symptoms that mimic common diseases. A final diagnosis can be elusive and often requires an impressive line-up of diagnostic tests. In this ongoing case, an otherwise healthy young adult is undergoing work-up for a pulmonary condition that appears to mimic many of the signs and symptoms of asthma.

A 34-year-old female was admitted with shortness of breath and right-sided chest pain gradually worsening over two weeks. On admission, the patient was afebrile and tachycardic with lab results significant for an elevated D-dimer. White blood cell count and pro-calcitonin were normal. Medical history was significant for severe childhood asthma that waned in her teens with only mild symptoms until a year ago. Home medications included daily long-acting beta- and muscarinic-agonist and corticosteroid inhalers as well as an as needed short-acting beta-agonist inhaler which this patient used appropriately. Review of systems revealed a recent history of early-morning joint stiffness and swelling, transient weakness of the shoulders and hips, and an itchy rash present intermittently on the trunk and around the eyes. Physical exam showed diminished breath sounds but no wheezing as well as a poorly circumscribed, erythematous periorbital rash. A CT chest with contrast was negative for pulmonary embolism but did show ground glass opacities (GGOs) in both lungs. Notably, this patient had been hospitalized or visited the emergency department five times in the last 10 months for supposed asthma exacerbations and pneumonia. There were no identifiable triggers for these exacerbations. Symptoms always improved with short courses of antibiotics and prednisone but would recur within a few months. A review of imaging revealed GGOs had been present in both lungs for at least a year. The patient was again started on antibiotics, nebulizers, and prednisone pending further work-up. Pulmonology was consulted given concern for recurrent pneumonia in an otherwise healthy patient.

Pulmonology immediately suspected an asthma mimic and non-infectious cause. Given the persistence of GGOs on imaging, the acute, frequently recurrent exacerbations of asthma-like symptoms after years of only mild disease, and possible musculocutaneous features, the pulmonology team suspected a rheumatologic process. Antibiotics were discontinued and rheumatology and dermatology were consulted. These teams ultimately recommended outpatient follow-up as repeated prednisone use may have masked some findings. Infectious work-up was entirely negative. Labs were significant for positive antinuclear antibodies and perinuclear anti-neutrophil cytoplasmic antibodies (ANCA) as well as elevated rheumatoid factor. Pertinent negatives included creatinine kinase, aldolase, anti-cyclic citrullinated peptide, and anti-Smith antibodies. Top differentials currently include ANCA vasculitis (possibly eosinophilic granulomatosis with polyangiitis) vs a myositis-like syndrome vs connective tissue disease-related interstitial lung disease vs an organizing pneumonia. Further work-up is pending with a bronchoscopy scheduled.

Asthma and pneumonia are common conditions that physicians will have encountered many times in their careers. Physicians must pay careful attention to a patient's medical history as more serious diagnoses that may mimic these common conditions can be easily overlooked. A broad approach is important, even in patients that initially appear to have a straightforward diagnosis.

43) NONOPERATIVE MANAGEMENT OF INFECTIOUS MONONUCLEOSIS-ASSOCIATED SPLENIC RUPTURE

Ryan McQueen; Edward Harwick; John C. Densmore, MD
Medical College of Wisconsin, Milwaukee, WI

Case: We present the case of an 18-year-old female who presented with atraumatic splenic rupture in the setting of infectious mononucleosis (IM). Her past medical history is significant for postural orthostatic tachycardia syndrome (POTS), she also has a sister diagnosed with Ehlers-Danlos syndrome. Given her presentation and unique background, she was followed closely by surgery and hematology. The decision was made to pursue conservative management and she was discharged home four days after admission with a 6-week physical activity restriction.

Conclusion: Atraumatic splenic rupture is a rare but serious complication of IM and should always be considered in patients with epigastric/left upper quadrant pain and/or worsening systemic symptoms with a concomitant viral prodrome. This patient's medical and family history warranted unique clinical considerations and multidisciplinary collaboration throughout in-patient management and follow-up. The lessons learned from nonoperative management of pediatric splenic injuries may be successfully applied to medical organ rupture, working in close partnership with hematologists to understand the time course and endpoints for the underlying inflammatory condition.

44) SICKLE CELL CRISIS BY EMERGENT HEMODIALYSIS

Philisha Mesidor, MSci; Helina Feleke, BS; Antoni Wojtkowski, MD, FACP
Medical College of Wisconsin, Milwaukee, WI

Case Presentation: A 53-year-old male with a past medical history of sickle cell disease (HbSS), HFrEF (EF 48%), valvular heart disease, afib/flutter s/p DCCV, CKDIII, and HTN presented to the ED with sickle cell pain and AKI. Initial labs were significant for: hgb 7.7 g/dL, reticulocyte percentage > 19.8%, WBC 15.1 k/uL, creatinine 3.76 mg/dL (eGFR 18 mL/min/1.73 m2), K+ 5.6 mmol/L, HCO3- 20 mmol/L, AST 95 U/L, ALT 104 U/L, alk phos 165 U/L, and total bilirubin 8.3 mg/dL. On day 2 of his admission WBC increased to 23.9 k/uL, creatinine increased to 5.89 mg/dL (eGFR 11), K+ increased to 7.3 mmol/L, HCO3- decreased to 9 mmol/L. Additionally, his total bilirubin increased to 27.8 mg/dL. He was transferred to the ICU for emergent exchange transfusion, as well as 2 days of CVVH. After the exchange transfusion his liver functions tests improved significantly. He was transferred out of the ICU and transitioned to inpatient HD. He was subsequently discharged with plans for outpatient HD.

Discussion: SCH is defined as "liver dysfunction and hyperbilirubinemia due to intrahepatic sickling process during SCD crisis, leading to ischemia, sequestration, and cholestasis" (Shah, 2017). Hyperbilirubinemia caused by SCH can reach a total bilirubin > 13.0 mg/dL (Kyrana et al., 2021). SCH, combined with chronic transfusions common in patients with SCD, can further strain the liver. This can potentially cause iron overload and eventually chronic liver disease, which can leave the liver vulnerable to the effects of intrahepatic sickling. Approximately 7% of SCD deaths are due to SCH complications. As the SCD population advances with treatment and life expectancy improves, chronic end-organ complications like SCH may become more common.

Conclusion: This case illustrates the importance of educating patients with SCH about Hepatitis A/B vaccines and SCH-specific signs/symptoms of cirrhosis. (Samuel 2023). Management of patients with SCH includes intravenous fluids and oxygenation. In more severe cases, treatment may involve exchange transfusion or liver transplant. However, risks of vascular thrombosis, graft failure, and infections are to be considered. Recognizing SCH during a sickle cell crisis can be critical. Early identification is key to preventing progression into SCH and, potentially, chronic liver disease.

Sources:

Kyrana E, Rees D, Lacaille F, Fitzpatrick E, Davenport M, Heaton N, Height S, Samyn M, Mavilio F, Brousse V, Suddle A, Chakravorty S, Verma A, Gupte G, Velangi M, Inusa B, Drasar E, Hadzic N, Grammatikopoulos T, Hind J, Deheragoda M, Sellars M, Dhawan A. Clinical management of sickle cell liver disease in children and young adults. Arch Dis Child. 2021 Apr;106(4):315-320.

Shah, R., Taborda, C., & Chawla, S. (2017). Acute and chronic hepatobiliary manifestations of sickle cell disease: A review. World journal of gastrointestinal pathophysiology, 8(3), 108–116. https://doi.org/10.4291/wjgp.v8.i3.108

Samuel, S. S., & Jain, N. (2023). Sickle cell hepatopathy. In StatPearls [Internet]. StatPearls Publishing.

45) PLATELET PREDICAMENT: THE CLOT THICKENS

Imeh Ndiokho; Adrianna Jelen, DO; Stephanie Strohbeen, MD
Medical College of Wisconsin, Milwaukee, WI

In the US, up to 900,000 people are affected by VTE with up to 20% of VTEs occurring in patients with cancer and malignancy. Essential thrombocythemia (ET) is a rare myeloproliferative neoplasm characterized by thrombocytosis and megakaryocytic hyperplasia. While many patients with ET are asymptomatic at diagnosis, some patients may experience recurrent headaches, microvascular symptoms, or even thrombotic or hemorrhagic complications.

Case: A 42-year-old Caucasian male with a history of thrombocytosis, chronic knee pain, lower back pain secondary to degenerative disk disease, obesity, GERD, ADHD presented with significant left lower extremity (LLE) swelling and cough. Family history is positive for thrombocytosis and early coronary heart bypass. The patient was found to have an unprovoked DVT spanning from the left common femoral vein to the distal IVC and left lower lobe subsegmental PE on Abdominal and Chest Computed Tomography (CT). Patient initiated on heparin drip and Interventional Radiology (IR) was consulted; the patient underwent an uncomplicated thrombectomy with the placement of a left iliac stent. Patient was loaded with Plavix before being transitioned to 75mg daily Plavix and transitioned to Lovenox BID injections the following day. Hematology consulted due to lack of risk factors for DVT and began work-up for hypercoagulable disease. Patient was discharged on Lovenox and instructed to follow-up in two-weeks for further Hematology workup and results.

Patient subsequently presented to the hospital ten days later with abdominal bruising at Lovenox injection sites. The patient also had noticeably increased LLE swelling compared to RLE. Lower Extremity Ultrasound was significant for DVT in LLE without detectable doppler flow. Further Abdominal and Chest CT revealed a new DVT extending into the left external iliac vein extending into the visualized common femoral and greater saphenous and femoral veins, worsening bilateral lower lobe segmental and subsegmental PE with similar distribution to CT during prior hospitalization. Patient was placed on heparin drip at admission. Interventional Radiology consulted and patient underwent a thrombectomy with tPA infusion. Hematology consulted and the patient underwent PIS bone marrow biopsy which was notable for rare scattered CD34(+) myeloid blasts and hematogones suggesting Essential Thrombocythemia (ET) as the likely diagnosis. Workup from prior admission notable for JAK2 V167F mutation. The patient was started on hydroxyurea and folic acid; and his Lovenox dosage was increased. Patient instructed to closely follow-up with Hematology for further work-up for myeloproliferative neoplasm and determination of appropriate anticoagulation.

Discussion: Already a rare condition, the diagnosis and treatment of ET requires a nuanced approach as it is a diagnosis of exclusion. It can be difficult to differentiate JAK2-mutated ET from PV, further complicating diagnosis. Notably, the risk of thrombotic and hemorrhagic events are increased with ET and even more so with the JAK2 V617F mutation. Increased hemorrhagic risk warrants management with cytoreductive therapy, low-dose aspirin, and optimization of cardiovascular risk factors. Improving the quality of life of patients with ET requires a multidisciplinary approach in managing symptoms while also managing risks of anticoagulation-associated bleeding.

46) WHEN BLOOD IS THICKER THAN BLOOD: HYPERVISCOSITY SYNDROME DUE TO HYPERTRIGLYCERIDEMIA

Sofia Nehring Firmino; Bartho Caponi, MD, FACP
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Hyperviscosity syndrome (HVS) is a medical emergency where increased blood viscosity leads to microvascular congestion and subsequent tissue ischemia, requiring prompt management. HVS is often associated with hematologic problems, such as Waldenström macroglobulinemia or polycythemia vera, due to pathological increase of a cell line or serum proteins. HVS usually presents as impaired vision, headaches, paresthesia, and confusion. We present a case of hyperviscosity syndrome secondary to hypertriglyceridemia.

Case Description: A 40-year-old male with known hypertriglyceridemia treated with 40 mg atorvastatin and 200 mg fenofibrate, type 2 diabetes on insulin, morbid obesity, and obstructive sleep apnea presented with acute onset dyspnea, chest and epigastric pain, diffuse myalgias, lower extremity paresthesia, and headache refractory to analgesics. He was hypoxic with oxygen saturations of 88% on ambient air, treated with supplemental oxygen. He was found to have elevated triglycerides of 6,439 mg/dL, hyperglycemia (235 mg/dL), hypernatremia with a sodium of 150 mg/dL, creatinine kinase of 575 U/L, and BUN of 28 mg/dL. Blood gases were not obtainable due to lipemia. He did not have myoglobinuria. Clinical exam, labs, and CT chest-abdomen-pelvis did not demonstrate acute pancreatitis, and CT angiogram was negative for pulmonary embolism or edema. He was mildly somnolent and inattentive but had no focal neurologic deficits. He had no known family history of familial hypertriglyceridemia or familial hyperchylomicronemia. He was started on continuous insulin and 5% dextrose infusion for immediate correction of both hypernatremia and hypertriglyceridemia; plasmapheresis was considered but deferred. After two days of continuous treatment, his triglyceride level decreased to 1,612 mg/dL, and corrected sodium was 143 mg/dL. He had marked improvement in all his acute symptoms and no longer required supplemental oxygen, supporting hypertriglyceridemia-induced HVS as the etiology of his symptoms. After five days of insulin infusion, he was transitioned to a subcutaneous insulin regimen and discharged with triglycerides of 1,027 mg/dL and corrected sodium of 136 mg/dL.

Discussion: HVS is often associated with hematologic malignancies and can lead to diffuse symptomology that requires prompt recognition. This is an unusual presentation of HVS where the hyperviscosity was secondary to elevated triglycerides, a condition rarely described in the literature compared to the well-known hypertriglyceridemia-induced pancreatitis. In this case, the hypertriglyceridemia-related HVS responded to prompt administration of intravenous insulin to decrease sequalae of tissue hypoperfusion. In a patient with no evidence of hematologic malignancy, a full evaluation for other causes of hyperviscosity, including high triglycerides, must be completed to ensure appropriate diagnosis and management.

47) ANTERIOR CEREBRAL ARTERY STROKE FOLLOWING SURGICAL INTERVENTION FOR CLOSTRIDIUM DIFFICILE TOXIC MEGACOLON

Linda Nwumeh; Adrianna Jelen, DO; Stephanie Strohbeen, MD
Medical College of Wisconsin, Milwaukee, WI

Toxic megacolon is a life-threatening complication of colitis characterized by acute colonic distension greater than 6 cm. When secondary to Clostridium difficile colitis, early surgical intervention is required in most cases with the risk of progressive colonic dilation leading to perforation.

An elderly male presented to the hospital with 4 days of abdominal pain, nausea, vomiting, and watery diarrhea. He had no recent usage of antibiotics. The past medical history is significant for hyperlipidemia, hypertension, hypothyroidism, and rheumatoid arthritis. The only prior surgery was a remote prostatectomy for prior prostate cancer. He denied ever using tobacco or current alcohol use.

On hospital admission, the patient was afebrile and the blood pressure was 137/84 mmHg. He was alert and oriented and his abdomen was distended, with absent bowel sounds. A partially reduced left inguinal hernia was noted and tender to palpation.

The WBC was 9.9 K/mcl with 97% neutrophils. There was metabolic acidosis with a bicarbonate level of 14 mmol/L and lactic acid level of 3.2 mmol/L. The serum creatinine was 1.69 mg/dL. Fecal C. difficile toxin B PCR and enzyme immunoassay were positive. A CT of the abdomen and pelvis demonstrated colonic obstruction involving sigmoid colon herniation through the left inguinal canal and upstream colonic gaseous distension to 7 cm.

The patient was resuscitated with IV fluids and given 1 dose of oral fidaxomicin 200 mg prior to intravenous metronidazole 500 mg every 8 hours and oral vancomycin 500 mg every 6 hours.

The patient initially refused surgical intervention but ultimately underwent incarcerated colon reduction with large bowel reduction on the second day of admission. Postoperatively he was anuric and tachypneic with worsening acidosis, prompting exploratory laparotomy with subtotal colectomy and end ileostomy on the fourth day of admission due to concern for ischemic bowel. He remained intubated and minimally responsive in the surgical intensive care unit with hypernatremia to 150 mmol/L and serum creatinine to 4.24 mg/dL. On the sixth day of admission, he was found to have an ischemic anterior cerebral artery stroke with left-sided hemiparesis and aphasia after only right-sided spontaneous movement was noted.

Reperfusion therapy was not pursued due to ineligibility. The patient later developed deep venous thromboembolisms in both extremities of his hemiparetic side, with anticoagulation deferred due to possible hemorrhagic conversion of the stroke. WBC rose to 19.3 K/mcl and the patient remained minimally responsive. Given poor prognosis, comfort measures were pursued, and the patient expired on the twenty-third day of admission.

This case illustrates the importance of early surgical intervention for the treatment of toxic megacolon secondary to C. difficile given its high morbidity and mortality and introduces perioperative stroke as a previously unreported complication of recovery in the literature which contributed to mortality for this patient. Maintaining clinical vigilance for patients with risk factors for perioperative stroke is critical to increase chances of timely recognition.

48) DUODENAL NEUROENDOCRINE TUMOR MIMICKING GASTROINTESTINAL TUMOR

Kassandra Ogbodu; Ana Johnson Escauriza; Roshan Thapa MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: A neuroendocrine tumor (NET) is a form of neoplasm arising from specialized neuroendocrine cells. Duodenal NETs are characterized by their infrequent occurrence, constituting less than 1% of all malignant tumors, and only 2-3% of gastrointestinal neuroendocrine tumors overall. The clinical presentation of duodenal NETs share similarities with other tumors in the digestive tract, leading to a lack of specificity and the emergence of intricate clinical symptoms.

Case Presentation: A 68-year-old male with a past medical history of T2DM, SLE, antiphospholipid syndrome, chronic anemia, and atrial fibrillation presents to the emergency department with hypotension and hypoxia. He was treated with antibiotics and steroids for possible SLE pneumonitis and secondary infection. On admission, a persistent decline in hemoglobin was observed, (reaching a notable low of 6.7), indicative of profound iron deficiency anemia. CTAP showed Proximal duodenal submucosal mass consistent with a GIST. No evidence of distant disease with this and past history of large hyperplastic and fundic gland polyps in past prompted gastroenterology intervention with an esophagogastroduodenoscopy (EGD). The EGD unveiled a substantial submucosal mass lesion in the duodenal bulb behind the pyloric channel with ulcerations, dark red blood, and clots, which added complexity to the presentation. Pathological examination confirmed the mass as a well-differentiated grade 1 neuroendocrine tumor (NET) of the duodenum. After the gastrectomy and duodenal resection in the operating room to address the bleeding NET, bright red blood in the Jackson-Pratt (JP) drain was observed, along with lower abdominal pain and hypotension. A return to the operating room was indicated for an exploratory laparotomy, abdominal washout, evacuation of a hematoma, along with the application of hemostatic agents to ensure hemostasis. During the exploratory surgery, evacuation of a hematoma in the right upper quadrant was performed. Achieving hemostasis and addressing the patient's medical coagulopathy were effectively managed and no additional complications were encountered.

Discussion: NETs are a type of tumor originating from stem cells with neuroendocrine markers producing peptide or bioactive amine hormones causing different clinical syndromes4. In this case, NETs occurred in the duodenum possessing a low incidence of 4% of all digestive tract tumors. D-NETs are sub-classified into 5 subtypes; therefore, the clinical manifestations such as abdominal pain and intestinal obstruction are similar to those of other digestive tract tumors3. Furthermore, a GIST can be clinically suspected based on GI bleed and preoperative imaging test results. GISTs account for less than 1% of all GI tumors and are commonly seen in the stomach in asymptomatic patients or with vague symptoms such as abdominal discomfort. Overall, this case suggests that duodenal NETs can show similar clinical symptoms presenting as a GIST2.

Conclusion: Enhancing cognizance regarding the distinctions between GISTs and NETs amid vague or atypical symptom presentations holds the potential to expedite early diagnoses and improve overall patient survival.

49) WHO MAKES HEALTHCARE DECISIONS WHEN YOU CAN'T?

Breanna Palmen; Sabrina Hofmeister, MD; George Lange, MD
Medical College of Wisconsin, Milwaukee, WI

Wisconsin legally recognizes two forms of advanced care directive (ACD) documents: the power of health care attorney and the living will. These are powerful tools for patients to meet their goals of care in the event they are unable to speak for themselves. They also serve as tools for physicians to ensure they are treating patients within their goals of care. ACD completion is an issue nationwide but is especially important to address and examine in Wisconsin as we are not a next of kin state.

The current national average for ACD completion rate is 36.7%. This quality improvement project involves identifying the percentage of patients with an ACD within Froedtert and another equally utilized hospital system (referred to as Hospital System 2). We also evaluated how age, race, socioeconomic status, and insurance payor impact ACD document completion.

Two separate chart reviews were performed for each hospital system. Patients were considered to have an ACD if they had an electronically retrievable document that contained the appropriate witness signatures. A chi square test was performed to determine which factors were significantly associated with ACD completion. These factors were then analyzed through a logistic regression analysis to identify positive and negative predictive factors for each respective population.

Our results show an ACD completion rate for both systems that is well below the national average: Froedtert with 15.8% and Hospital System 2 with 19%. Both systems show negative predictive factors with younger age and racial minorities, and positive predictive factors with older age and those with Medicare.

This QI project has identified an important area of patient care that is underutilized and neglected among marginalized groups. From this initial data, we hope to create best practice for improving ACD completion rates, staff and patient education, and standardized protocols to increase the awareness and completion rates of ACD.

50) PERSPECTIVES ON INTEGRATIVE APPROACHES AMONG PARENTS OF PEDIATRIC PATIENTS IN AN URBAN U.S. MIDWESTERN COMMUNITY

Anna Pearson; Mala Mathur, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Background: Integrative health (IH) is the use of evidence-based, complementary therapies in conjunction with traditional medicine. It is associated with medical benefits, particularly for patients with common chronic pediatric conditions. Parents' interest in IH for their children within urban Midwestern communities remains unclear.

Objectives: The purpose of this study was to understand the familiarity, level of use, and parent perceptions of IH approaches to health care for pediatric patients in one urban Midwestern community.

Methods: Parents were recruited from three geographically diverse, general pediatric clinics at one urban Midwestern academic medical center to complete an online survey. The survey inquired about parents' familiarity, current use, interest in IH, specific IH approaches of interest, and for which pediatric conditions. Parents were also asked if they would be interested in attending group medical visits focused on IH for their children. Descriptive statistics were calculated.

Results: Participants (N=98) were 81.3% women (n=78) and 77.5% white (n=79). The average age was 36.9 years old (SD=7.78). Over half of the participants (53.7%, n=51) reported familiarity with IH; 34.0% of participants (n=33) reported they had used IH for their child in the past 12 months. Over half of participants (57.7%) were interested in having their provider use an integrative health approach for their child. The most commonly preferred IH approaches were psychological therapies (59.8%, n=58), combination therapies (50.5%, n=49), and nutritional and physical therapies (both 47.4%, n=46). The most common reasons participants were interested in an IH for their child's care were for preventative care and overall well-being (67.4%, n=65), to address mental health (63.2%, n=61), and for neurological issues (36.1%, n=35). About a quarter of participants (22.9%, n=22) expressed interest in attending a group medical visit focused on IH health.

Conclusion: Findings suggest over half of urban Midwestern parents are interested in IH approaches for their children. Additional research is needed to determine how to incorporate evidenced-based IH approaches into general pediatric care, particularly those addressing mental health and common neurologic conditions.

51) A CHALLENGING CASE OF NON-RESOLVING PNEUMONIA

Hannah Peck; Christine Rogers; Samuel Fischer
Medical College of Wisconsin, Milwaukee, WI

Introduction: In immunocompromised patients, Pneumocystis jirovecii pneumonia (PJP) is a common cause of pneumonia with severe features [Thomas, 2007; CDC guidelines; Thomas, 2004]. PJP is a fungal infection that is diagnosed with microscopic evaluation of sputum or bronchoalveolar lavage fluid [Limper, 1989]. Diagnosis can be difficult as patients at risk for PJP are frequently co-infected with other pathogens such as pulmonary aspergillosis or cytomegalovirus (CMV) [Zhong, 2023; Korkmaz, 2018]. Trimethoprim-sulfamethoxazole (TMP-SMX) is the first line treatment of PJP, however, atovaquone can be used if the patient is not a candidate for TMP-SMX therapy; addition of glucocorticoids can be considered in severe cases [Goto, 2015].

Case Description: The patient is a male in his fifth decade with past medical history including stage IV chronic kidney disease secondary to chronic autoimmune-mediated graft failure status post bilateral renal transplant on immunosuppression (mycophenolate mofetil 500mg BID, tacrolimus 3mg BID, and prednisone 5mg) and known CMV viremia on valganciclovir presenting with fatigue and cough. The patient was admitted one week prior with suspected community acquired pneumonia and treated with ceftriaxone and azithromycin without symptomatic improvement. He remained afebrile without evidence of leukocytosis. Chest x-ray showed interval worsening of bilateral lung opacities and CT chest was significant for bilateral ground glass opacities and perihilar thickening suggestive of an atypical infection. CMV titers had also increased to 405IU/mL from 78.4IU/mL drawn one year prior. Bronchoscopy with bronchoalveolar lavage was completed which detected Pneumocystis jirovecii (PJP), CMV, and rhinovirus. Atovaquone was initiated for a 21-day course and the patient was continued on valganciclovir. In the setting of mixed CMV and PJP pneumonia, both tacrolimus and mycophenolate dosing were reduced to 2.5mg BID and 250mg BID, respectively. Prednisone 5mg was continued. Patient was also referred for re-transplantation evaluation given eGFR <20 with concern for acute graft rejection with plans to continue plasmapheresis three times per month.

Discussion: The evaluation of dyspnea in an immunocompromised patient remains a challenging task frequently complicated by complex medical history providing competing etiologies. Here we present a case of non-resolving pneumonia due to PJP in an immune compromised patient. The differential diagnosis is broad, but it is important to consider diagnostic interventions like bronchoscopy in high-risk patients. Early recognition is important to prevent morbidity and mortality. In our patient, pulmonary and infectious disease were consulted, and the bronchoscope provided the definitive diagnosis for early appropriate treatment. Indeed, management of complex patients hinges on frequent re-evaluation of the concordance between presumed diagnoses and actual clinical status, while coordinating the efforts of multiple specialties and disciplines to produce an accurate and effective treatment.

52) REDEFINING PANDAS: FROM PSYCHIATRIC MISCONCEPTIONS TO RHEUMATIC REALITIES

Angelina Piryani; Manisha Piryani, DO; Alvin Wells, MD, PhD
Ross University School of Medicine, St. Michael, Barbados

Introduction: Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections (PANDAS) is a neuropsychiatric disorder caused by Group A Streptococcal (GAS) infection. Symptoms usually include sudden-onset development of obsessive-compulsive symptoms, tics, and behavioral disturbances (Dop et al., 2020). PANDAS, a term first coined in the 1990s by pediatrician Susan E. Swedo has been quite controversial as many physicians around the world fail to recognize this phenomenon and see the disease as more of a psychiatric diagnosis; thus warranting antipsychotics (Pupillo, 2017). The pathophysiology of the disease is suspected to be secondary to the mechanism of molecular mimicry between streptococcal and neuronal antigens, which results in an autoimmune response resulting in the previously stated behaviors (Mahadevan et al., 2023). Treatment and management still remains controversial. While some physicians, after failure of antibiotics, turn to psychiatry and the patient is placed on various antipsychotics; others turn to immunomodulatory agents including, but not limited to, steroids, NSAIDs, intravenous immunoglobulin (IVIG), or plasma exchange (Wilbur et al, 2019). Treatment remains controversial.

Case Report: A 4-year-old young girl with no significant past medical history aside from recurrent, confirmed streptococcal infections presented to the clinic with new-onset obsessive compulsive behaviors, emotional dysregulation, and regression of learned behaviors. The patient's medications included acetaminophen, pediatric multivitamins, and probiotics. Family history was negative for any autoimmune diseases.The patient had been diagnosed with streptococcus approximately three times in the past year, all treated with antibiotics. Since then, she was exhibiting body-focused repetitive behaviors (BFRBs) such as injuring herself in the forehead by repeatedly gliding her headband back and forth to the point of bleeding. The patient had regressed in her toileting and was seen having more frequent accidents around the house. Per her mother, she was experiencing frequent emotional outbursts as well. No recent history of tick or insect bites, sick contacts, or foreign travel. Patient did not show any constitutional, ocular, skin, gastrointestinal, cardiac, or pulmonary manifestations. She was diagnosed with PANDAS and treated with Xampet and a medrol dosepak with almost immediate improvement in symptoms. By her 4-week follow-up appointment, the patient's OCD behaviors had dramatically improved and she had returned to her baseline toileting with no further accidents noted. The patient's neuropsychiatric symptoms improved without the use of any psychiatric medications.

Discussion: PANDAS is a relatively new diagnosis and given its controversial nature is often missed in the medical community. The diagnostic criteria established by advocacy groups such as the official 'PANDAS Network' have left physicians weary as many children with unassociated psychiatric disorders may easily fit under the diagnosis. Treatment also remains a controversy, and research is still being done to determine the value of immunomodulatory agents. With our case, the patient achieved almost instantaneous recovery with the use of steroids and methotrexate. Cases such as this one often go misdiagnosed as pure psychiatric disorders. Therefore, there is a great need for further research for PANDAS.

53) PROGRESSIVE BILATERAL PERIPHERAL ULCERATIVE KERATITIS (PUK) REFRACTORY TO CONVENTIONAL THERAPY SUCCESSFULLY TREATED WITH RITUXAN

Nikita Piryani; Manisha Piryani, DO
Medical College of Wisconsin, Milwaukee, WI

Approximately 25-39% of cases of rheumatoid arthritis (RA) exhibit ocular involvement, with peripheral ulcerative keratitis (PUK) occurring in 1-3% of those patients. PUK is poorly understood, but likely due to an abnormal inflammatory response involving immune complex deposition and activation of the complement cascade resulting in stromal destruction. We present a case of progressive bilateral PUK refractory to conventional therapy successfully treated with Rituxan.

A 72-year-old female with a history significant for seropositive RA and secondary Sjogren's syndrome, on Kevzara, presented with redness and pain in her right eye. Patient had already failed several DMARDs including methotrexate, leflunomide, Enbrel, Humira, and Actemra.

Ocular exam revealed rheumatologic melt of the right eye with large inferior crescenteric and perilimbal epithelial defects, central stromal thinning, and inferonasal involvement. Punctal plugs were placed in both eyes along with a Kontur bandage contact lens (BCL) in the right. Oral prednisone (30 mg), Xiidra, doxycycline, Vitamin C, erythromycin ointment, and moxifloxacin were started.

Two weeks post-initial visit, the patient's exam was stable, thus doxycycline was decreased, and prednisone was tapered. However, two weeks later, the patient complained of blurred vision and pain in her right eye. Slit lamp examination revealed severe recurrence of 270 degrees of peripheral ulcerative keratitis in the right eye, sparing only the area of the previous lesion with epithelial defect and limbal injection. Her doxycycline and prednisone (60 mg taper) were increased.

At a follow-up visit three days later, a new lesion with mild epithelial defect had developed in the left eye. Ofloxacin was increased and the immunosuppression with prednisone was continued. IV solumedrol was administered for three days after further worsening including a second lesion present on the left eye despite daily prednisone. Although IV immunosuppression provided some improvement for a couple days, the left eye worsened severely with 300 degrees of involvement, thinning, and epithelial defects. The patient was admitted for additional IV steroids and started on methotrexate and Rituxan as well. Immediate improvement was noted, and the patient was tapered from IV steroids to oral prednisone. The infusions were scheduled for every two weeks. After discharge, the patient continued with infusions, and the defect in her right eye healed completely six months later.

Initial treatment of PUK includes lubrication and systemic corticosteroids at 1 mg/kg/day; in refractory cases, it can be escalated to 1 g/day bolus for three days. Foster and Messmer suggest considering PUK as a sign of systemic vasculitis which cannot be controlled with local therapies alone and recommend immunosuppressive drugs such as methotrexate. Cyclophosphamide, azathioprine, and cyclosporine can be added to cases unresponsive to methotrexate. Studies have also found biologic therapies, including infliximab, etanercept, rituximab to be helpful. Although the patient in our case showed initial improvement after oral and IV systemic corticosteroids, her vision stabilized after initiation of a biologic therapy. Moreover, her condition progressed to involve both eyes. While bilateral PUK is an extremely rare complication of RA, this case emphasizes the lack of standardized protocols in treating ocular inflammation secondary to systemic disease.

54) COMPLICATIONS OF GEMCITABINE THERAPY: SYSTEMIC CAPILLARY LEAK SYNDROME IN T-CELL LYMPHOMA

Nikita Piryani; Paola Farah; Mark Ehioghae
Medical College of Wisconsin, Milwaukee, WI

Here we present a case of T-cell lymphoma treated with gemcitabine therapy complicated by systemic capillary leak syndrome.

An 82-year-old female with a significant past medical history for T-cell lymphoma on gemcitabine, hyperlipidemia, hypertension, asthma, heart failure with preserved ejection fraction (HFpEF, 56-59% EF), and anasarca, presented with erythema of the left upper arm, chest wall, and abdomen, with associated shortness of breath, worsening lower extremity edema, and cough. Her vital signs were normal except for an oxygen saturation of 89% on room air. Examination revealed decreased air movement bilaterally, along with redness and warmth of the left chest wall and abdomen, extending to her arm and back. Her left upper extremity was edematous without crepitus, and motor and sensory functions were intact, with adequate perfusion. Initial laboratory tests indicated elevated B-type natriuretic peptide (BNP) (7329 pg/mL), elevated creatinine (1.85 mg/dL), and mild hypoalbuminemia (3.3 g/dL). Chest X-ray showed cardiomegaly, pulmonary vascular congestion, and interstitial opacities. Troponin levels (30 ng/L) were elevated without ST elevations on electrocardiogram (EKG), and venous Doppler ruled out deep vein thrombosis. Her troponin was consistent with previous readings. She received nebulizers and magnesium, leading to symptomatic improvement, but her saturation only improved with supplemental oxygen. Ceftriaxone was included for suspected erysipelas and furosemide for heart failure management. The patient was admitted with diagnosis of erysipelas, acute kidney injury, and acute decompensated heart failure.

Despite aggressive diuretic therapy, signs of fluid overload persisted, prompting suspicion of chemotherapy-induced systemic capillary leak syndrome (SCLS). Nifedipine was discontinued, and a computed tomography (CT) scan of the chest revealed borderline cardiomegaly, consolidations at lung bases suggestive of atelectasis, small pleural effusions, and scattered ground glass opacities. Diuretics were stopped, and normal saline was initiated alongside dexamethasone to manage capillary leak and stabilize renal function. The patient's renal function returned to baseline and she was able to tolerate furosemide.

The patient's hospital stay was also complicated by atrial flutter. Negative findings on ultrasound and ventilation/perfusion (VQ) scan ruled out pulmonary embolism, although the patient's risk profile necessitated empirical anticoagulation. Rate control was achieved with metoprolol. Concurrently, worsening anemia required one-unit packed red blood cell transfusion to stabilize hemoglobin levels. Dexamethasone was discontinued upon discharge and she was weaned off supplemental oxygen. After discharge, the patient continued rehab and cephalexin.

SCLS is an extremely rare complication of gemcitabine therapy with an incidence rate of less than one percent. It is hypothesized to be secondary to endothelial dysfunction resulting in increased capillary permeability. Gemcitabine's active metabolites damage capillary endothelial cells' mitochondria, leading to excessive reactive oxygen species production and disruption of cellular function. There is no cure for SCLS and gemcitabine therapy should be promptly stopped and treated with steroids. In our case, the patient's hypervolemia, normal ejection fraction, hypoalbuminemia, and history of gemcitabine prompted suspicion of SCLS. Increasing awareness of SCLS among patients receiving gemcitabine therapy is crucial and should be considered in the evaluation of anasarca that cannot be explained by organ failure.

55) DISSEMINATED BLASTOMYCOSIS

Rashi Purohit; Sanjay Singh, MD, MBBS
Medical College of Wisconsin, Milwaukee, WI

Introduction: Blastomycosis is a fungal infection that presents 3 weeks to 3 months following inhalation of Blastomyces dermatitidis or occasionally Blastomyces gilchristii, or via direct entry through skin lesions. Its usual environment is in decaying soil, vegetation, and wood, and is typically endemic to the Ohio and Mississippi River Valleys and the Great Lakes regions. Patients may be asymptomatic or may present with pulmonary symptoms including pneumonia. It can also progress to disseminated blastomycosis by spreading to the central nervous system (CNS), bones, and skin. The nonspecific nature of symptoms makes it imperative to prioritize gathering comprehensive history of travel and exposure to make a timely diagnosis and avoid respiratory or CNS exacerbations. This abstract outlines the case of a critically ill patient with disseminated blastomycosis without an apparent, typical source of acquisition.

Case Description: A 55-year-old man was seen by dermatology for a 3-week history of ulcerative, draining nodules on the back and upper and lower extremities. He had a 2-month history of non-productive cough, shortness of breath and fatigue, and a 4-month history of a 20-pound weight loss. He traveled to the west coast 5 months prior to his presentation to the hospital where he visited a spa and participated in a whole-body immersion in a blend of traditional organic material for treatment. A normal chest X-ray and the array of cutaneous findings suggested cellulitis which prompted management with a week's course of cephalexin. When his symptoms failed to improve, the presence of broad-based budding on the punch biopsy along with Blastomyces antigen in the urine suggested blastomycosis. This prompted inpatient management with treatment with amphotericin B. Chest CT revealed cavitary lesions and numerous nodules bilaterally, consistent with the diagnosis of blastomycosis. Although the patient did not exhibit neurologic symptoms, a brain MRI was ordered to exclude CNS involvement. Imaging revealed multiple micro-abscesses in the parenchyma, indicating CNS involvement and disseminated blastomycosis. This led to IV treatment with amphotericin B for two weeks with transition to oral treatment with the CNS penetrating voriconazole.

Discussion: This case portrays the importance of obtaining a detailed history of travel by considering uncharacteristic exposures, and likewise, including blastomycosis in the differential in the setting of generalized pulmonary and cutaneous symptoms as appropriate. As such, while our patient's history was not remarkable in terms of the typical history of exposure to Blastomyces, he recalled traveling to the west coast and participating in an exotic spa treatment. Although it is difficult to establish causation, we highlight this case to expand our current understanding of the environment and transmission of Blastomyces and suggest strengthened measures for safety practices, regulation and frequency in places such as exotic spas that may harbor elements that transmit blastomycosis. The purpose of describing this case is twofold – to reinforce need for public health and safety measures within establishments that risk transmission, and to maintain high level of suspicion for blastomycosis through such documentation.

56) PERIOPERATIVE MANAGEMENT OF RECURRENT BRONCHO-PLEURAL CUTANEOUS FISTULA FOLLOWING MYOCUTANEOUS FLAP COVER SURGERY

Rashi Purohit; Sanjay Singh, MD, MBBS
Medical College of Wisconsin, Milwaukee, WI

Introduction: Broncho-pleural cutaneous fistulas (BPCF) are abnormal connections between the bronchus, pleural space, and the chest wall, which compromise ventilation dynamics by being open to air. These usually occur as complications following lobectomy or from bronchoscopy, chemotherapy or radiation therapy, malignancy, pneumothorax, or infection. They may be fatal if untreated and can rarely result in tension pneumothorax or empyema. Video-assisted thoracoscopic surgery (VATS) or thoracotomy approaches have been employed for repair with variable success after management with chest-tube assisted drainage and treatment of infections. These include direct closure of the fistula, omentum or vascularized muscle flap to seal the air leak, pneumonectomy, decortication, Eloesser flap, or Clagett procedures. This abstract aims to highlight the perioperative management of a patient with recurrent air-leaks and BPCF repair surgery in the setting of multiple comorbidities and an extensive surgical history.

Case Description: The patient is a 70-year-old man post right pedicled latissimus dorsi myocutaneous flap cover repair of a continued, persistent BPCF. He had a history of lung adenocarcinoma treated with right lower and left upper lobe lobectomies and right upper wedge resection complicated by a right apical broncho-pleural fistula. The patient also has a history of deep vein thrombosis (DVT) and paroxysmal atrial fibrillation. Past attempts to repair the air leak were unsuccessful, including re-do VATS assisted closure, robot assisted decortication, and Eloesser flap procedure complicated by wound infection. The patient elected to have a right thoracotomy chest wall exploration with right pedicled latissimus dorsi myocutaneous flap cover and chest wall debridement with wound VAC placement to repair the persistent BPCF. During the procedure, the cutaneous opening of the BPCF was sealed with Tegaderm following anesthesia and prior to intubation and mask ventilation to prevent air leaks. The patient did not harbor signs of impaired ventilation or pneumothorax from pressure build-up. Post-operative imaging showed persistent hydropneumothorax in the right lung along with chest wall edema. This patient had a repaired cutaneous closure with a persistent bronchial fistula. Management included focused respiratory therapy with High-Flo devices with lower fraction of inspired oxygen (FiO2) to offer some alveolar positive end-expiratory pressure (PEEP) and minimize paradoxical movement of the chest wall repair. Minimal PEEP at room air FiO2 helps maintain alveolar nitrogenous splinting and minimizes absorption atelectasis. Precautionary thoracostomy and Heimlich Valve kits were made available at bedside in the case of a tension pneumothorax complication. The latissimus dorsi flap was monitored for vascularization. DVT prophylaxis included Lovenox and the patient's electrolyte levels were managed. The patient was discharged after their wound VACs removal and upon approval by the surgical team.

Discussion: Here, we describe the management of a case of chronic, recurrent air leak post multiple surgical attempts to seal BPCF in the setting of prior lobectomies and wedge resection, resulting in lowered lung ventilatory capacity, and higher degree of close clinical monitoring for respiratory function. Close watch for signs of tension pneumothorax while transitioning the patient to adequate respiratory function while minimizing paradoxical movement stress on the flap is crucial to postoperative recovery.

57) THE ASSOCIATION OF 25-HYDROXYVITAMIN D LEVELS WITH BK VIREMIA AND NEPHROPATHY IN KIDNEY TRANSPLANT RECIPIENTS

Suseela Raj; Angela Zhou; Sandesh Parajuli, MBBS
University of Wisconsin School of Medicine and Public Health, Madison WI

Background: In kidney transplant recipients, BK virus reactivation and subsequent viremia (BKV) and nephropathy (BKN) are significant causes of morbidity and mortality. Limited treatment options make these complications particularly detrimental. Vitamin D supports immune function, with vitamin D deficiency and insufficiency associated with increased susceptibility to infection. However, low 25-hydroxyvitamin D [25(OH)D] levels are common among kidney transplant recipients. The association between 25(OH)D and BKV and BKN in kidney transplant recipients remains undefined.

Methods: The relationships between serum 25(OH)D level, measured 61 days to 2 years post-transplant, and BKV and BKN were examined in 2938 and 3308 kidney transplant recipients, respectively. Only recipients with 25(OH)D measured prior to the presence of the outcome of interest, either BKV or BKN, were included in each respective group. The study population was selected from the Wisconsin Allograft Recipient Database (WisARD), including recipients who received kidney transplants from 2010 to 2019 at the University of Wisconsin.

Results: Out of 3308 kidney transplant recipients, 399 (12%) were vitamin D deficient [25(OH)D <20 ng/mL], and 916 (27.7%) were insufficient [25(OH)D 20-29 ng/mL]. 184 recipients had BKV, and 44 recipients had BKN. The incidence rate for BKV/100 person-years was 2.88 in the 25(OH) D sufficient group, 2.22 in the insufficient group, and 2.37 in the deficient group. With reference to sufficient 25(OH)D, there was no significant association between 25(OH)D and BKV after adjustment for multiple baseline characteristics. For BKN, the incidence rate/100 person-years was 0.30 in the 25(OH)D sufficient group, 0.75 in the insufficient group, and 1.28 in the deficient group. After adjustment for multiple baseline characteristics, with reference to sufficient 25(OH)D, deficiency (aHR: 3.92; 95% CI: 1.66-9.23) and insufficiency (aHR: 2.22; 95% CI: 1.11-4.45) were significantly associated with increased risk for BKN.

Conclusions: According to these findings, low serum 25(OH)D level after kidney transplantation is associated with increased risk of BKN but not BKV. These findings reinforce the role of vitamin D in immune function, highlighting the importance of further research to explore the significance of vitamin D levels in transplant recipients and the effects of vitamin D supplements to mitigate complications associated with BKN and other post-transplant infections.

58) FROM SKIN LESION TO VISION LOSS: A CASE OF DISSEMINATED BLASTOMYCOSIS

Nathan Rose; Alisha Sharma, MD; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Introduction: Blastomycosis is a systemic pyogranulomatous infection caused by the thermally dimorphic fungus Blastomyces dermatitidis or Blastomyces gilchristii. The lungs are the most common site of infection, followed by the skin, bones, genitourinary tract, and central nervous system. Ocular infections are rare and require prompt diagnosis, as untreated infections may result in rapid and complete vision loss.

Case: A previously healthy 37-year-old man with no significant past medical history presented to the emergency department with a skin lesion on the left nares. The lesion was initially drained but persisted despite a course of Augmentin. In the following weeks, he developed pain and decreased visual acuity in his right eye. The ophthalmologic evaluation was concerning for endophthalmitis or pan-uveitis, with primary concern for endogenous endophthalmitis. He received intravitreal antibiotics while pursuing further workup. Initial assessments ruled out a spectrum of infectious and autoimmune etiologies, including tuberculosis, syphilis, toxoplasmosis, HIV, cat scratch disease, aspergillus, mycobacteria, and viral etiologies, among others. Further specialized tests such as ANA, urine blastomycosis, histoplasmosis screens, and HLA typing for Bechet's syndrome were also negative. Blood and ocular fluid cultures, including intravitreal and anterior chamber taps, consistently showed no growth of pathogens. Following a lack of improvement, he underwent a pars plana vitrectomy and received additional intravitreal antibiotics. Repeat cultures obtained intra-operatively were again negative. Over the next month, his vision further deteriorated, accompanied by increasing pain, prompting his referral to our emergency department for a thorough evaluation. The skin lesion on his left nares had a verrucous appearance, raising suspicion of an underlying fungal infection. Following consultation with Dermatology, a biopsy showed broad-based budding yeast with double refractile walls consistent with blastomycosis. A CT-chest revealed a right-sided infiltrate consistent with prior blastomycosis. Given an otherwise unremarkable, extensive workup of the patient's worsening ocular symptoms, including lack of bacterial growth on multiple cultures and worsening of symptoms despite antibiotic treatment, the patient's ocular findings and nose lesion are presumed to be the result of disseminated blastomycosis. The patient was initially treated with amphotericin and transitioned to voriconazole, which he will take for at least one year. The patient has had no significant visual recovery.

Discussion: This case illustrates disseminated blastomycosis with rare ocular involvement, a challenging diagnosis often requiring extensive evaluation and multidisciplinary management. This report highlights the significance of considering fungal etiologies in atypical ocular presentations, particularly in endemic regions like the Midwest. The first case of eyelid blastomycosis was documented in 1914 in a patient with widely disseminated disease. Since then, approximately 40 published works have discussed eye-related illnesses, with most focusing on conditions affecting the eyelids with fewer reports of conjunctivitis, keratitis, iritis, choroiditis, endophthalmitis, panophthalmitis, and orbital cellulitis. We report a unique case of disseminated blastomycoses with pulmonary, skin, and ocular involvement, including unilateral endophthalmitis and panuveitis. The rarity of ocular complications in human blastomycosis contrasts with the frequent occurrence of ocular manifestations, particularly endophthalmitis, in canine blastomycosis. Acknowledging the rarity, early suspicion, and thorough investigation become crucial factors in preserving an individual's vision.

59) A RARE CASE OF DELAYED-ONSET IATROGENIC SUBCLAVIAN AV FISTULA

Takwa Salem
University of Wisconsin School of Medicine and Public Health, Madison WI

INTRODUCTION: Arteriovenous fistulas (AVF) are rare but serious complications of catheterization procedures, more commonly arising iatrogenically, spontaneously, congenitally, or in the setting of trauma. Persistent AV fistulas can eventually lead to high-output heart failure and require surgical intervention. A single case of subclavian AV fistulas following catheterization was reported; however, this is the first case to report a subclavian AV fistula from a PICC placement that was silent for years.

CASE DESCRIPTION: 70-year-old male with a history of coronary artery disease s/p biventricular intracardiac device (ICD), CABG, heart failure, uncontrolled type 2 diabetes mellitus, chronic venous insufficiency, chronic kidney disease stage 3, and history of left upper extremity (LUE) PICC-associated deep venous thrombosis (DVT) in 2020 was admitted to the hospital from podiatry clinic with concern for right foot fourth digit wet gangrene. He endorsed increased feeling of fluid building up in his abdomen. Physical exam was notable for soft, mildly distended abdomen, 3+ bilateral lower extremities pitting edema with diffuse erythema and overlying bullae anteriorly and gangrenous fourth digit of the right foot. Labs showed an increase in creatine. TTE revealed stable ejection fraction and mildly distended IVC. IV diuresis was initiated; however, the patient showed minimal improvement in lower extremity edema. On hospital day #2, patient reported increased swelling of the left arm to the point where he could no longer wear a watch on that hand. Patient reports chronic intermittent left arm edema since his PICC-associated DVT that is worse in the mornings and improves throughout the day. Physical exam revealed 2+ moderate pitting edema of LUE that was nontender, and non-erythematous with palpable pulses. Swelling worsened overnight, so the team ordered LUE ultrasound that was initially positive for DVT, but the final read was negative. Initial imaging results were discussed radiologists who recommended more proximal repeat LUE ultrasound that revealed left subclavian AVF, likely a complication of PICC placement. On hospital day #9, CTA confirmed AV fistula from a branch of the left subclavian artery to the left subclavian vein. Patient referred for surgical evaluation in outpatient setting.

DISCUSSION: This case highlights a delayed-onset subclavian AVF presenting as chronic unilateral intermittent edema in a patient with a history of pacemaker implantation. It is unclear when exactly this patient's fistula formed, but we believe this was most likely a complication of subclavian vein access during pacemaker implantation (2015) and likely exacerbated by PICC-associated DVT extending to mid L subclavian vein (2020). AVF could have been mistaken for DVT, post-thrombotic syndrome, or venous insufficiency. Further work-up should be considered to rule out an AV fistula in patients with a history of complicated PICC lines. Healthcare providers should maintain a high index of suspicion for AVF in patients with unilateral arm swelling and history of deep venous puncture. Early identification through comprehensive upper extremity ultrasound imaging is crucial for prompt surgical intervention and reducing risk of complications. Minimizing repeated trauma during vascular access procedures, such as placing PICC lines contra-laterally after recent pacemaker implantation, may help prevent AVF formation.

60) HARNESSING MACHINE LEARNING MODELS TO PREDICT AND PREVENT HOSPITAL READMISSIONS: A SYSTEMATIC REVIEW

Mukul Sharda; Nathaniel Verhagen; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Background: Hospital readmission rates are a critical measure of healthcare quality and patient outcomes. High readmission rates can indicate poor patient management and lead to increased healthcare costs. Innovations in artificial Intelligence (AI) have the potential to improve patient care through clinical decision support tools, generative clinical care pathways, and predictive analytics creating the potential for more personalized, cost-effective healthcare delivery.

Methodology: A systematic review of 37 articles from January 2013 to January 2024 was conducted using PubMed. The search focused on studies exploring the application of Machine Learning/AI in healthcare in predicting/reducing hospital readmission rates, including the ethical implications of AI. Key articles were selected to illustrate the diverse applications and outcomes of AI in reducing readmissions.

Results: The systematic review revealed that ChatGPT and other AI tools improved patient communication and education, enhancing adherence to treatment plans and reducing potential readmissions. In community-based primary healthcare, data from 35 studies indicated that AI significantly aids in early diagnosis and continuous disease management, crucial for preventing readmissions. In anesthesiology, a review of 15 applications of AI and telemedicine showed a 20% reduction in post-operative complications through remote monitoring and timely interventions. Improved surgical documentation using GPT-4 led to a 15% reduction in documentation errors, enhancing post-operative care and decreasing readmissions. AI's 85% accuracy in forensic data analysis was noted, which could be translated to medical contexts for accurate patient outcomes, thus reducing readmissions. Addressing biases in AI systems, as highlighted in 25 studies, is critical for equitable healthcare and reducing readmissions. Comparisons of 30 AI models to human clinicians demonstrated similar accuracy levels but faster processing times, enhancing diagnostic accuracy and patient management, potentially reducing readmissions. AI-driven advancements in COVID-19 diagnostics showed a 25-30% improvement in diagnostic accuracy, which contributed to reduced complications and readmissions. Literature also revealed the use of machine learning models to predict the readmission of patients with COPD exacerbations and Heart failure along with prediction of sepsis.

Conclusion: Our review of the literature shows that the integration of AI into healthcare has shown promising potential in reducing hospital readmission rates by optimizing patient management and predicting health outcomes. Machine learning algorithms have been effective in predicting patient length of stay and identifying patients at risk for early readmission. These predictive capabilities allow healthcare providers to implement tailored interventions, streamline discharge processes, personalize post-discharge care plans, and ensure appropriate follow-up care to reduce readmissions. In conclusion, the strategic deployment of AI in hospital settings not only enhances the precision of patient care but also offers a sustainable approach to reducing readmission rates through predictive analytics and personalized care planning.

61) DETERMINING THE EFFECTIVENESS OF MACHINE LEARNING MODELS FOR PREDICTING HOSPITAL LENGTH OF STAY: A SYSTEMATIC REVIEW

Mukul Sharda; Nathaniel Verhagen; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Background: The application of machine learning (ML) to predict hospital length of stay (LoS) displays promise for advancements in healthcare management and patient care. LoS is frequently seen as a metric that can help determine the severity of sickness, cost of care, and resource use. Furthermore, individualized discharge planning has been linked to quantifiable outcomes including lower rebound admission rates and increased patient satisfaction. However, these results depend on best practice standards being in place for working health professionals. The goal of this study is to determine ML's viability to assist the healthcare process in predicting LoS. If ML can help predict the LoS then this would help improve patient care and reduce hospital penalizations from the Hospital Readmissions Reduction Program.

Methodology: In this publication, a systematic review was conducted using mainly PubMed articles (with two exceptions, one article from ACM and the other from MDPI) using the keywords Machine Learning and Length of Stay. We found 24 studies from January 2020 to January 2024 that highlight the efficacy of different ML models/algorithms in various LoS medical contexts, looking specifically at their potential to improve operational decisions, resource allocations, and clinical outcomes. The scope of this systematic review is to evaluate recent developments that are related to the use of ML in LoS prediction.

Results: We found in our systematic review that a majority of studies highlight the accuracy of ML models being very high when predicting LoS. The accuracy rating cited by multiple sources was often greater or equal to 89%, however many did mention the limitations of needing a larger data scope and potential biases in the program. The algorithm's predictions can be classified as short-term or long-term LoS predictions for patients, with the former usually being a prediction of fewer than 7 days and the latter being anything past short-term. However, the prediction quality often decreases near the beginning of the long-term marker. This (short and long) marker varies between studies due to factors such as data quality and the ML algorithm/model used. Many studies reference the Random Forest model as having the highest or near highest accuracy when predicting LoS. Furthermore, this accuracy was consistent across different sectors of medicine, with missing or uncategorized data.

Conclusion: ML models hold substantial promise in predicting hospital LoS, potentially transforming healthcare operations by enabling more informed decision-making, early intervention, efficient scheduling, decreased workload on physicians, a more informed patient, and optimized resource allocation. This would ultimately help create better-personalized discharge plans that would benefit the patient, doctor, and hospital administrators. Programming advancements and further validation are crucial to realize the possible benefits fully.

62) HELP, I CAN'T SEE: A CASE OF POSTERIOR SCLERITIS AFTER INFLUENZA A VIRAL INFECTION

Samantha Simpson; Reese Jacobson; Pinky Jha, MD, MPH, FACP
Medical College of Wisconsin, Milwaukee, WI

Posterior scleritis is a rare form of scleritis that is often associated with underlying systemic disease or infection and has the ability to cause permanent vision loss if not caught and treated early. Rarely have reports of ocular complications been linked to influenza A infections, which makes an already challenging diagnosis even more formidable.

A 62-year-old glasses wearing female with a medical history of hypertension, GERD, tobacco use, anxiety/depression and recent infection with confirmed Influenza A presented to the hospital with blurred vision and severe headache. She had previously seen an ophthalmologist, who noted elevated intraocular pressures, corneal edema, and severe chemosis and was subsequently prescribed topical steroids and intraocular lowering pressure agents. After 5 days, there was still minimal improvement in her symptoms, and a Bright scan showed possible fluid collection in the posterior episcleral space concerning posterior scleritis - at that time, the patient was directed to the hospital for rapid work up and IV steroid administration. Both infectious and autoimmune causes of posterior scleritis were evaluated. Cyclic citrullinated peptide antibody, antinuclear antibody, cytoplasmic neutrophil antibody, RPR, treponemal antibodies, and QuantiFERON were unremarkable. Patient was found to have a slightly elevated Rheumatoid factor – after consulting rheumatology, they felt this was not the cause of the scleritis. With infectious and rheumatologic causes effectively ruled out, it was determined that her posterior scleritis occurred secondary to the influenza A infection. Over the course of 3 days, the patient's vision improved. She was switched to oral steroids, discharged, and subsequently underwent a steroid taper without further vision changes.

This case highlights the need for increased awareness of Influenza A associated Posterior Scleritis and emphasizes the importance of gathering a thorough history.

63) QUIVERING ABDOMEN, IS IT RELATED TO YOUR BACK?

Abbey Stoltenburg; Yuka Kobayashi, DO
Medical College of Wisconsin, Milwaukee, WI

Background: Although back pain is a common complaint that brings patients to seek healthcare, the causes of it may be complex including infectious, inflammatory, traumatic, degenerative, congenital, among other causes. In older adults, degenerative joint disease is common and can lead to back pain. However, taking a thorough history is important in excluding other factors that may contribute to back pain such as neurological causes leading to truncal weakness.

Case description: We present the case of a 63-year-old male with past medical history of anxiety, dysphonia, depression, hypertension, migraine, and paroxysmal Afib. Seven years ago, he had left knee arthroscopy and multiple left meniscectomy surgeries.

He presented to clinic with chronic low back pain that began one year ago after bending over to pick something up. His pain worsened 3 weeks ago when he tried to pop his back. He also endorsed intermittent intense muscle spasms across his lower back which radiated pain into his abdomen for the past 3 weeks. His muscle spasms and pain worsen with bending, extension, or lying on his back. He had presented to walk-in clinics multiple times over the past year for back pain management which had been treated with muscle relaxants and ibuprofen. Recently, he also acutely injured his back by twisting and picking something up. Over the past year he mentioned gaining 30 lbs. He did not report any bladder or bowel incontinence.

Upon further questioning, history was relevant for neurology visits for resting left hand and facial tremor that developed one year ago. He also reported intermittent left lateral leg numbness that was not associated with any trauma, for decades. Neurology suspected he had early Parkinson's Disease due to subtle left upper extremity bradykinesia and resting tremor. He takes propranolol which initially helped with his tremors and has not yet obtained a DaTscan.

Examination disclosed hand and facial tremors. Spinal exam revealed tenderness over the lower lumbar paraspinal muscles with limited spinal ROM in forward extension. Strength testing revealed 4/5 bilaterally weak hip flexors. Sensation was intact in bilateral lower extremities to light touch. Lumbar spine XR showed grade 1 anterolisthesis of L5 on S1 secondary to pars defects as well as multilevel degenerative disc height loss and facet arthropathy with vascular calcifications.

Differential diagnosis included lumbar degenerative joint disease given degenerative changes in his lumbar spine XR, which may be causing his back pain. However, the cause of his abdominal spasms is unknown despite degenerative changes possibly correlating with innervation to this area. Given his additional neurological findings, patient was advised to follow up with neurology to obtain DaTscan to rule out Parkinson's Disease as a contributing factor. Other additional causes of abdominal spasms and truncal control issues could be dystonia or multiple system atrophy. In the future, may consider spinal MRI for other causes of muscle spasms.

Discussion: This case illustrates the many considerations of causes of back pain, the importance of obtaining a good history, and the need for interprofessional collaboration to manage causes of complicated back pain.

64) THE RELATIVE IMPACT OF RISK FACTORS FOR HOMELESSNESS, HOUSING BARRIERS, AND HEALTHCARE BARRIERS ON MENTAL HEALTH OUTCOMES: A SINGLE-CENTER STUDY

Lorelle Sun; Mary Meyers, BS; Julie Ruth Owen, MD, MBA
Medical College of Wisconsin, Milwaukee, WI

Background: Housing and healthcare both play crucial roles in overall health. Though research has shown housing and healthcare barriers negatively impact mental health, little is known about the relative influence of each.

Objective: This study seeks to understand the relationship between housing circumstance, barriers to care, and mental health outcomes among low-income, uninsured patients seen at a Milwaukee free clinic, the Saturday Clinic for the Uninsured (SCU). This includes investigating the relative impact of risk factors for homelessness, housing barriers, and healthcare barriers on mental health outcomes.

Methods: Surveys were administered to patients at SCU (n = 94) from June to December 2023. Surveys assessed patient demographics, housing and healthcare barriers, and mental health outcomes, primarily measured by the Patient Health Questionnaire-2 (PHQ-2), General Anxiety Disorder-2 (GAD-2), modified loneliness scale, and individuals' subjective mental health rating.

Results: Increased healthcare barriers were the strongest predictors of worse PHQ-2, GAD-2, loneliness, and mental health ratings. Risk factors for homelessness also significantly predicted PHQ-2, GAD-2, and loneliness scores, but did not predict mental health rating. Despite significant associations, increased housing barriers did not significantly predict any of the four mental health metrics. Among respondents, the most frequently reported healthcare barriers were insurance coverage, financial issues, and transportation issues. In addition, there was significantly lower patient trust in mental healthcare providers than in general medical providers, which may reflect increased stigma.

Conclusion: Compared to housing barriers, increased healthcare barriers significantly predicted worse mental health outcomes. This study emphasizes the importance of addressing healthcare barriers to improve mental health.

65) CARDIAC ARREST IN CORONAVIRUS DISEASE 2019 (COVID-19) PATIENTS: A COMPARATIVE STUDY OF RISK FACTORS AND VENTRICULAR ARRHYTHMIC COMORBIDITIES

Lorelle Sun; Fatima Zohra Khamissi, BS; Ivor Benjamin, MD
Medical College of Wisconsin, Milwaukee, WI

Background: Coronavirus Disease 2019 (COVID-19) is linked to an increased risk of cardiovascular diseases such as myocardial infarction and stroke. However, the relationship between COVID-19 and cardiac arrest remains underexplored. This study aims to compare COVID-positive individuals who experienced a cardiac arrest with those who did not.

Methods: We conducted a single center, retrospective observation study of deceased COVID-positive patients within the Froedtert Hospital network, which serves the largest metropolitan area in Milwaukee, WI. We used the TriNetX platform, a cohort query tool, to sort through vast amounts of deidentified patient data via various inputs such as demographic characteristics and International Classification Disease 10th revision (ICD-10) codes. We analyzed data from 32,620 Froedtert patients, who were labeled as deceased between January 1st 2020 to December 31st, 2023. To identify our cardiac arrest group (n = 13,870), we defined our TriNetX query criteria to include patients who had a positive COVID polymerase chain reaction (PCR) test and later had the ICD10 code "I46 Cardiac Arrest." To identify our noncardiac arrest group (n = 1300), we defined our query criteria to include patients who had a positive COVID PCR test but excluded those with the ICD10 code "I46 Cardiac Arrest."

Results: Our study found that among the 32,620 deceased Froedtert patients between 2020 and 2023, 13,870 patients or 42.5% tested positive for COVID and did not have a cardiac arrest while 1300 patients or 4.0% tested positive for COVID and later had a cardiac arrest. Notably, 62% of cardiac arrests occurred within six months, 73% within one year, and 90% within two years of their initial positive COVID test.

In addition, our analysis revealed that the cardiac arrest group had significantly higher proportions of most ventricular arrhythmic comorbidities, including hypertension, acute coronary syndrome, human immunodeficiency virus (HIV) infection, alcohol use, and more. However, hyperlipidemia and chronic obstructive pulmonary disease were the only ventricular arrhythmic comorbidities whose proportions were not significantly different between the cardiac arrest and non-cardiac arrest group

Furthermore, our study found that the cardiac arrest group exhibited a longer mean QTc interval (470 ms vs 459 ms, $p \leq 0.01$) and a lower mean left ventricular ejection fraction (52% vs 57%, $p \leq 0.01$) compared to the noncardiac arrest group. Additionally, the cardiac arrest group had a significantly higher proportion of Black patients (27% vs 14%, $p \leq 0.01$) and a lower mean age (68 vs 75, $p \leq 0.01$) compared to the noncardiac arrest group, which was unexpected given that older age is typically a risk factor for cardiac arrest.

Conclusion: These findings provide valuable insights into the characteristics of COVID-positive patients who suffer cardiac arrest. Because our recent studies of COVID-19 have identified profibrotic phenotypes in human autopsies, further research is needed to not only elucidate the cellular and biochemical mechanisms that connect COVID-19 with cardiac arrest but to address potential implications for arrhythmic complications including sudden cardiac death in survivors.

66) HOLDING UP THE MIRROR: UTILIZING THE PERSPECTIVES OF MEDICAL STUDENTS TO IMPROVE THE CLINICAL LEARNING ENVIRONMENT

Isabelle Tasse; Sebastian Sewera; Martin Muntz, MD, FACP
Medical College of Wisconsin, Milwaukee, WI

Background: Psychological safety (PS), "the belief that the work environment is safe for interpersonal risk-taking," is a key feature of an excellent clinical learning environment (CLE) with benefits in domains of learning, performance, engagement, and inclusivity. Thus, fostering psychological safety for learners should be a priority for educators and team leaders in the CLE. The CLE thread was developed during a longitudinal course spanning from the beginning of clerkships until graduation as an opportunity to introduce medical students to the CLE and use reflective narrative to identify opportunities for professional development and CLE improvement. We sought to understand medical students' perspective of behaviors that foster PS on inpatient internal medicine teaching teams.

Methods: Students halfway through clerkships wrote brief narratives responding to the prompt: "Reflect on a clerkship team leader who was instrumental in developing psychological safety on your team. What specifically did she/he do that was helpful for you as a M3 student to know that psychological safety was present? Please include her/his name and department/site." Responses were reviewed, and qualitative codes were developed using the constant comparative method of analysis. The research team reviewed several representative comments and refined the codes. Two team members coded each student narrative. Internal medicine narratives with assigned codes were then separated for thematic analysis. This project was reviewed by the Department of Emergency Medicine's Quality Improvement committee and found to be exempt from full IRB review.

Results: Of 805 clerkship narratives analyzed between academic years 2020-21 and 2023-24, 245 (30%) referenced internal medicine team members. Students identified residents (64%), attendings (32%), fellows, coordinators, and senior students as leaders who fostered PS. Codes that were commonly assigned to responses included, "create an anti-perfectionist environment", "set clear expectations", and "creating an environment where everyone belongs".

Conclusion: Medical students recognize behaviors that foster PS on internal medicine teaching teams and, thus, their experience in the CLE. While PS is included in general faculty onboarding and residents as teachers activities, we will plan professional development activities to improve specific behaviors identified in this study. In addition to large group sessions focused on improving teaching, venues such as newsletters, department/division meetings, websites, digital boards, and social media are opportunities to share student reports of exemplar teachers. Partnering with Gold Humanism Honor Society on Thank a Resident Day and identifying opportunities to nominate faculty and residents for teaching awards are other opportunities to recognize excellence in PS in the CLE. We plan to use existing metrics to identify the impact of these interventions in CLE improvement and share via future scholarly work with transparency to all CLE participants through departmental report cards.

67) A RARE CASE OF CONCOMITANT DUAL DERMATOSES: SWEET SYNDROME AND ERYTHEMA NODOSUM

Kevin Thomas
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Sweet syndrome (SS) is an acute febrile neutrophilic dermatosis characterized by tender erythematous papules and pseudo vesicular or pustular papules. Erythema nodosum (EN) is a form of septal panniculitis that manifests with tender, erythematous, and violaceous nodules. Despite both SS and EN being reactive dermatoses associated with similar systemic conditions sharing many histological features, their concomitant occurrence in a patient is rare.

Case Presentation: We present the case of a 48-year-old female patient with a past medical history of T-cell lymphoblastic leukemia at age 18, initially seen in the emergency room with abdominal pain, fevers (102.3F), chills, vomiting, and diarrhea. Given abdominal tenderness on exam, she underwent a complete work up including laboratory tests and a CT scan, all of which were unremarkable. She was treated symptomatically and got better. However, a week later she developed new skin lesions on her face, upper and lower extremities, with distinctly different morphological lesion characteristics on the upper and lower extremities. The upper extremity had linearly arranged blister-like lesions as well as erythematous papules with vesicular foci and umbilication. The lower extremity revealed tender subcutaneous larger erythematous violaceous nodules extending from the knees to the ankles. Punch biopsies of both upper and lower extremity lesions were taken for pathology as well as bacterial, acid-fast bacillus (AFB), and fungal cultures. Histopathology of the upper extremity lesions showed prominent papillary dermal edema and a mixed inflammatory infiltrate, predominantly composed of histiocytoid cells confirming a diagnosis of histiocytoid variant of SS. On the other hand, histopathology of the lower extremity lesions showed predominantly septal lymphocytic and granulomatous panniculitis consistent with a diagnosis of EN. Patient was prescribed a tapering course of prednisone as well as triamcinolone acetonide cream while awaiting final cultures and work up for occult malignancy given the elevated risk of associated malignancy with SS. Patient had excellent response to therapy. Her work-up for malignancy was negative, however a few weeks later, her AFB culture came back positive for mycobacterium avium complex (MAC). Prednisone was stopped and she was treated for disseminated MAC infection. However, given that the concurrent occurrence of both SS and EN started within a week after an acute gastrointestinal infection, it remains unclear as to which one of these etiologies (disseminated MAC or acute gastrointestinal infection) led to the rare simultaneous occurrence of both SS and EN in our patient.

Discussion: Both Sweet syndrome (SS) and erythema nodosum (EN) are reactive dermatoses associated with certain infections, malignancies, autoimmune disorders, or inflammatory bowel disease. However, there are very few reported cases of concomitant occurrence of both SS and EN. While both SS and EN share clinical and histological features and are often treated similarly, early recognition and histological confirmation of these lesions is important to diagnose underlying conditions. In addition, subcutaneous Sweet syndrome, a variant of SS, can clinically mimic painful erythematous nodules of EN. Therefore, tissue biopsy and histopathological confirmation is needed to definitively establish EN as an additional diagnosis in a patient with SS.

68) A CASE OF HYPOKALEMIC PERIODIC PARALYSIS

Kevin To; Monika Pantha; Scott Mead, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Hypokalemic periodic paralysis (hypoPP) is a rare channelopathy characterized by muscle weakness or paralysis associated with decreased serum potassium levels, often triggered by high carbohydrate intake, post-exercise rest, or stress. Here we present a case of hypoPP in a patient without detectable mutations tested from a panel of six common genes.

Case Report: A 34-year-old man with no significant medical history presented to the ED with muscle weakness in the neck and back, along with the inability to feel his hands and feet since waking up. The patient reported that the debility progressed to the inability to move and walk. On the physical exam, vital signs were stable. Neurological exam was notable for a grade of 1/5 for bilateral proximal hip flexion and a grade of 2-3/5 and symmetric for bilateral shoulder flexion. The lab work-up was notable for serum potassium and phosphorus levels at 1.9 mmol/L and 1.6 mg/dL, respectively. Moreover, electrocardiogram (ECG) findings showed normal sinus rhythm and normal intervals without ST elevations, but U-waves and T-waves were present. Intravenous and oral replacement were administered. On hospital day two, the patient had markedly improved: walking independently to the bathroom and showing 5/5 strength throughout. Labs now show rebound hyperkalemia (5.5 mmol/L). Urinalysis ruled out renal potassium wasting. A presumptive diagnosis of hypoPP was made based on clinical presentation. He was discharged with plans to follow up with nephrology. The patient was referred to genetic counseling and instructed to reduce intake of carbohydrates to prevent the recurrence of hypokalemia. Results for a germline genetic test examining the Periodic Paralysis Panel of six genes encoding muscle ion channels (ATP1A2, CACNA1S, KCNJ2, MCM3AP, RYR1, SCN4A) were negative.

Discussion: HypoPP is a condition characterized by episodes of extreme muscle weakness, leading to immobility that can last between hours and days. Strenuous exercise, high carbohydrate intake, alcohol, stress, and illness may all contribute to and trigger these episodes. This case demonstrates the presentation of hypoPP with negative genetic testing on a panel of common mutations. Providers should consider hypoPP in patients presenting with marked weakness in the setting of hypokalemia.

69) VIBRIO ON VACATION; A CASE OF VIBRIO ALGINOLYTICUS BACTEREMIA IN A CIRRHOTIC PATIENT

Nathan Tunell; Mathew Francis, MD
Medical College of Wisconsin, Milwaukee, WI

Background: Vibrio alginolyticus (V. alginolyticus) is gram-negative bacterium often found in coastal regions within warm salty aquatic and marine habitats. Transmission of this bacteria usually occurs through ingestion of contaminated seafood or through exposure to seawater. V. alginolyticus typically manifests as cellulitis or otitis media with the rare possibility of more serious complications. Although unusual for V. alginolyticus to present with bacteremia, thorough history-taking and laboratory testing allows for time-sensitive diagnosis and treatment necessary to minimize further complications.

Case Presentation: This report describes a 66-year-old woman who traveled to the Mediterranean region and returned to the US with erythema and warmth to the right lower extremity and edema to bilateral lower extremities. She reported a PMH of cirrhosis and was prescribed furosemide, but she chose not to take the diuretic during her trip. Patient was admitted for cellulitis and initial infectious workup was otherwise unremarkable. Both chest x-ray and ultrasound of the lower extremities were negative for acute processes.

The right lower extremity cellulitis was initially treated with IV ceftriaxone. Blood cultures obtained on admission returned positive for gram negative rods 13 hours after collection. Further evaluation with BioFire testing and mass spectrometry revealed the bacteremia to be V. alginolyticus. A consultation was placed to the infectious disease team who recommended a two-week course of ciprofloxacin based on the bacteria's susceptibilities. Patient was discharged home after 3 days in an improved condition with the plan to follow up with her primary care provider.

Discussion: Infection by V. alginolyticus is an uncommon occurrence with only 277 confirmed cases out of 2,719 Vibrio cases worldwide in 2019. These infections typically present as a skin-related infection site of the external ear or lower extremities. It is exceedingly rare for V. alginolyticus to cause bacteremia, with no reported cases being available aside from infrequent case reports.

Additionally, the CDC states that in 10% of vibriosis cases the person had traveled outside of the USA in the 7 days before their illness began. Our patient seemingly obtained their infection while traveling and swimming in the Mediterranean Sea. This was the most likely source because of the known transmission of this bacteria occurring in seawater, the patient's skin breakdown due to non-adherence to their diuretic, and the patient's reduced immunity secondary to cirrhosis. The severity of the patient's case is of important consideration since 84% of people with V. alginolyticus do not require hospitalization. Recognition of these comorbidities along with these atypical presentations can allow expedited treatment and minimization of severe complications.

Conclusion: It is rare for V. alginolyticus to present as bacteremia, however the patient's decreased skin barrier integrity and reduced immunity secondary to cirrhosis made the patient vulnerable to infection when they swam in the Mediterranean Sea. Thorough history-taking regarding recent travel, as well as laboratory testing with Biofire or similar techniques can be advantageous in the diagnosis of V. alginolyticus which would be crucial in prevention of complications.

70) CASE REPORT: SEMAGLUTIDE-ASSOCIATED GASTRIC PNEUMATOSIS

Andrew Turunen; Reilly Coombs; Sushil Kumar Garg, MD
Medical College of Wisconsin, Milwaukee, WI

Introduction: Semaglutide is glucagon-like peptide-1 receptor agonist (GLP-1 RA) that works by increasing insulin secretion and decreasing glucagon secretion, ultimately delaying gastric emptying. This medication was originally indicated in the treatment of type 2 diabetes mellitus (T2DM). This medication has recently risen in popularity given its potential to cause weight loss. Common side effects of semaglutide reported in current literature include nausea, vomiting, diarrhea, hypoglycemia, and gastro-esophageal reflex disease (GERD). This is a case of a 61-year-old male with T2DM on semaglutide that presented to the emergency room with gastric pneumatosis and portal venous gas in perigastric venules and his liver. **Case Report:** The patient has a significant past medical history, with difficulties maintaining blood sugar control. In efforts to better control his blood sugar, semaglutide 0.5 subcutaneous injection weekly was started in place of his dulaglutide. After three months there was minimal improvement and the dose of semaglutide was increased from 0.5 mg to 1 mg weekly. One month after the dose increase, the patient complained of severe nausea, diarrhea, and constant headaches, which was concluded to be due to the increased semaglutide dose. Therefore, the semaglutide dose was decreased to 0.5 mg weekly. Nine months after the semaglutide dose decrease, this gentleman presented to the emergency department (ED) for evaluation of worsening abdominal pain, nausea, and vomiting for the last three days. The physical exam revealed no abdominal distention or guarding, with mild, generalized abdominal discomfort. A computed tomography (CT) abdomen pelvis with intravenous contract showed possible signs of gastric wall ischemia with findings of dusky-appearing gastric cardia and proximal fundus with pneumatosis. Also found was corresponding portal venous gas in perigastric venules and liver, distended loops of small bowel reflective of reactive ileus or enteritis. There was no transition point in the bowel indicative of mechanical obstruction and no evidence of ischemia or pneumatosis in the small bowel. Emergent esophagogastroduodenoscopy (EGD) was performed with findings of a normal esophagus, congested erythematous, hemorrhagic appearing, and petechial mucosa in the gastric fundus, greater curvature of the gastric body, and posterior wall of the gastric body. Further findings included retained gastric fluid and a normal duodenum. Pathology report showed gastric mucosa with superficial lamina propria hemorrhage and surface musical erosion. Lab findings upon ED arrival were unremarkable besides an elevated glucose at 201 mg/dL. This patient was admitted to the hospital for further care and monitoring. He was discharged 4 days later. A one-month follow-up endoscopy showed no signs of esophageal, gastric, or duodenal mucosa abnormalities. Pathology taken during this endoscopy showed normal antral and fundic mucosa as well as being negative for H. pylori. **Conclusion:** Given semaglutide's recent introduction to the market, the off-target effects of semaglutide are still being evaluated in real-world populations. After stopping semaglutide, the patient's symptoms improved. It is reasonable to suggest that the patient's semaglutide may have been the cause of these gastric effects. To our knowledge, there are currently no reported cases of gastric pneumonitis caused by semaglutide.

71) SUBLOBAR RESECTION IS ASSOCIATED WITH DECREASED OVERALL SURVIVAL IN STAGE I NON-SMALL CELL LUNG CANCER WITH TUMOR SPREAD THROUGH AIR SPACES

Brittany Walker
University of Wisconsin School of Medicine and Public Health, Madison WI

Purpose: Patients with stage I lung cancer are increasingly being treated with sublobar resection. However, it is unknown whether patients with airspace invasion derive similar benefits. Therefore, we analyzed the association between tumor spread through air spaces (STAS) and overall survival, specifically in patients who underwent sublobar versus lobar resection.

Methods: A retrospective cohort analysis was conducted on 421 adult patients who underwent a first-time pulmonary resection for non-small cell lung cancer (NSCLC) at a single academic institution between January 2018 and December 2022. Patients prior to 2018 were excluded due to institutional non-reporting of STAS. Baseline clinical, operative, and pathologic characteristics were compared between patients who did and did not have STAS on final pathologic assessment. Overall survival and disease-free survival were compared between patients with and without STAS using the Kaplan-Meier and Cox proportional hazards regression models. Overall survival and disease-free survival were also compared in a predefined subgroup of stage I patients with and without STAS who underwent lobectomy versus sublobar resection (wedge resection or segmentectomy.)

Results: Of 421 patients who underwent a pulmonary resection for lung cancer, 97 (23%) had tumor STAS. There was no difference in STAS based on patient comorbidities or pulmonary function, however patients with STAS were more likely to have a higher pack year history of smoking (47 vs 40yrs, p=0.041). Histologically, patients with STAS were more likely to have adenocarcinoma (91% vs 78%, p=0.049) with micropapillary and papillary predominant features, a larger tumor size (2.6cm vs 2.2cm, p=0.016), concurrent lymphovascular invasion (46% vs 32%, p=0.012), and a more advanced pathologic stage (p=0.003). There was no difference in overall survival (p=0.993) or disease-free survival (p=0.157) for the entire cohort of patients with or without STAS. However, in the subgroup of patients with stage I disease, those who underwent sublobar resection and had STAS had significantly decreased overall survival compared to those without STAS (p=0.042) or those who underwent lobectomy, regardless of the presence or absence of STAS (Table 1.) Five-year overall survival was 73% for stage I patients with STAS who underwent sublobar resection compared to 87% in patients without STAS and 90% in patients without STAS who underwent lobectomy.

Conclusions: Tumor spread through air spaces is associated with pulmonary adenocarcinoma with papillary and micropapillary features. In patients with stage I disease, STAS is associated with decreased overall survival in patients who undergo sublobar resection; however STAS does not affect overall survival in patients who undergo lobectomy.

72) CONCERN FOR TETANUS IN A HIGH RESOURCE ACADEMIC SETTING: A CASE REPORT

Emily Wendel; Hayley Vandenboom, MD
Medical College of Wisconsin, Milwaukee, WI

A 36-year-old male presented to the emergency department with acute onset muscle spasms, initially involving the right hamstring and progressing to the left gastrocnemius and right muscles of mastication. The patient had sustained a minor scrape from a piece of metal five days before the onset of symptoms. Despite removing rust from the wound, which briefly bled but healed without signs of infection, the patient's tetanus vaccination was last documented in 2006, 18 years before the injury. He exhibited no fever, diaphoresis, or autonomic instability that would suggest systemic infection.

The clinical presentation raised suspicion for generalized tetanus. The patient was promptly treated with tetanus immunoglobulin, tetanus toxoid, and intravenous metronidazole. Due to worsening muscle spasms and the potential risk of airway compromise from laryngospasm, symptom control was initiated with intravenous diazepam. However, increasing doses led to concerns of over-sedation. Magnesium sulfate was attempted as an adjunct therapy but was discontinued due to vascular occlusion. By the eighth day of hospitalization, the patient reported improvement in symptoms. A tapering of benzodiazepines was initiated, with a 50% reduction in diazepam on the ninth day. By day 16, the patient no longer required benzodiazepines and was managed with Tylenol, lidocaine patches, and physical therapy. He was discharged on the 16th day, with expected muscle soreness anticipated to last several weeks.

The diagnosis of tetanus was based on clinical signs and patient history, as confirmatory laboratory tests are not available and the disease is rare in developed regions. Tetanus is caused by Clostridium tetani, an obligate anaerobic bacterium found in soil and animal intestines. The bacteria release toxins, such as tetanospasmin, which prevent the release of inhibitory neurotransmitters, leading to unopposed muscle stimulation and spasms. The incubation period can vary widely, averaging eight days, with shorter periods associated with more severe illness. Full recovery can take months, requiring axon regeneration.

Tetanus is rare in developed countries due to effective vaccination programs and prophylactic treatments for high-risk wounds. The CDC reports an average of 29 cases per year in the United States from 2009-2018. In high-resource settings, risk factors include vaccination noncompliance and immunocompromised status. The low prevalence of tetanus in these settings poses a risk for delayed diagnosis.

This case highlights the importance of recognizing clinical presentations and the challenges of diagnosing and managing tetanus in developed regions. It underscores the necessity of maintaining up-to-date tetanus vaccination, advocating for Tdap boosters every 10 years, even in younger, healthy individuals.

73) WARM AUTOIMMUNE HEMOLYTIC ANEMIA PRESENTING AS INCIDENTAL HYPERBILIRUBINEMIA

Jenna Wettstein; Whitney Lynch, MD
Medical College of Wisconsin, Milwaukee, WI

Autoimmune hemolytic anemia (AIHA) is a condition in which the body creates autoantibodies that attack one's red blood cells. In warm autoimmune hemolytic anemia (WAIHI), these antibodies become active at body temperature. WAIHI can be associated with certain medications, lupus, or lymphoproliferative disorders and results in symptomatic and even life-threatening anemia due to hemolysis. Patients often present with symptoms related to the degree of anemia. Initial workup in asymptomatic patients is often precipitated by new-onset anemia. Other appreciable lab abnormalities include an indirect hyperbilirubinemia, elevated LDH, and low haptoglobin on account of hemolysis.

An 84 y/o male with hypertension, hyperlipidemia, atrial fibrillation, and celiac disease presented to establish care. Screening labs were obtained including liver function tests with plan for possible statin titration. Results showed an elevated total bilirubin level of 2.0mg/dL with normal AST, ALT, and alkaline phosphatase levels. A direct bilirubin level was added and noted to be 0.4mg/dL. Additional workup of a predominantly indirect hyperbilirubinemia showed a hemoglobin of 11.1g/dL, MCV of 107.8fL, lactate dehydrogenase level of 270U/L, and haptoglobin level of <10mg/dL. Blood smear was consistent with macrocytosis with concern for hemolysis. The patient was referred urgently to hematology with additional lab testing including an antibody screen and was diagnosed with WAIHI. He was started on prednisone 1mg/kg with PPI therapy and atovaquone for PCP prophylaxis due to a sulfa allergy. Flow cytometry was not suggestive of a lymphoproliferative disorder, and CT chest, abdomen, and pelvis were negative for lymphadenopathy or findings suggestive of malignancy. A prednisone wean was initiated to 30mg daily but given ongoing evidence of hemolysis, the patient was initiated on Rituximab infusions with continuation of Prednisone ultimately weaned to 10mg daily. He completed Rituximab over the course of a month but ultimately developed symptomatic anemia with a hemoglobin of 8.0g/dL requiring hospitalization with administration of 2 units of packed red blood cells and high dose Solumedrol 500mg IV for three days. Bone marrow biopsy was normal. He was discharged on Prednisone 60mg once daily. Hemoglobin at discharge was 8.3g/dL and improved to 9.7g/dL one week later at follow up. During that visit, he was started on Mycophenolate 500mg twice daily with initiation of Prednisone wean by 10mg daily per week. He had ongoing improvement in hemoglobin up to 13.4g/dL one month post-hospitalization. Labs remained stable for 7 months on Mycophenolate 500mg twice daily until hemolysis unfortunately recurred at which time he was switched back to Rituximab infusions (completed four doses) with plan to monitor clinically with repeat labs to assess hemoglobin stability every 2 weeks. Reinitiation of steroids was deferred due to negative side effects and stable hemoglobin. To date, hemoglobin remained stable at 10.8g/dL after a second round of four Rituximab infusions.

This case illustrates the importance of pursuing additional workup of unexplained lab abnormalities given these abnormalities may precede symptoms or clinical progression. WAIHA specifically requires additional investigation to rule out potential causes (i.e., lymphoproliferative disorder) that may have an improved prognosis with earlier detection and treatment.

74) IRON DEFICIENCY PRESENTING AS REFRACTORY MIGRAINES

Jenna Wettstein; Whitney Lynch, MD
Medical College of Wisconsin, Milwaukee, WI

Iron deficiency has been recognized by the World Health Organization as the most common nutritional deficiency worldwide and is the predominant form of anemia. Common causes of iron deficiency include heavy menstruation in women, gastrointestinal bleeding, and deficient dietary iron intake or absorption. Reduced blood oxygen levels that result from iron deficiency can cause symptoms of shortness of breath, tachycardia, heart palpitations, fatigue, headaches, and dizziness.

A 36-year-old female with a past medical history of hypertension, post-partum pre-eclampsia, gestational diabetes, anxiety, ADHD, hyperhidrosis, heavy menstrual cycles, and migraine headaches consulted her primary care provider due to increased frequency of migraines that were significantly impacting activities of daily living. She requested a refill of Sumatriptan which previously aborted her headaches. However, due to ongoing, refractory symptoms, she was changed to Rizatriptan ultimately titrated to 10 mg with minimal response. Recent menstrual cycles were not noted to be heavy, but the patient had a history of menorrhagia. Bloodwork was obtained and revealed results consistent with significant iron deficiency (ferritin 3ug/mL, iron 16ug/dL, total iron binding capacity 472ug/dL, transferrin saturation 3%, and unsaturated iron binding capacity 456ug/dL). Iron infusions were initiated once weekly for 3 weeks with resolution of symptoms. Bloodwork was repeated post-infusion and showed a normalization of iron deficiency markers (hemoglobin 10.6 g/dL, ferritin 162ug/dL, iron 85ug/dL, total iron binding capacity 313ug/dL, transferrin saturation 27%, and unsaturated iron binding capacity 228ug/dL). At that time, the patient was instructed to begin oral iron supplementation with ferrous sulfate 325 mg twice daily with plan for additional workup to rule out possible sources of bleeding given absence of recent abnormal uterine bleeding. Upper and lower endoscopies were obtained to evaluate for evidence of an H. pylori infection, celiac disease, or structural lesions which were normal. Hematology was consulted to discuss any other potential sources and noted many cases to be idiopathic. They agreed with plan for endoscopy and advised screening for volume of tea use. Additionally, they remarked on the absence of PPI therapy on the patient's medication list, as this was another potential source of iron deficiency. The patient did not drink tea regularly and had not previously been on PPI therapy. Hematology recommended continuing oral iron supplementation and advised monitoring iron levels 2-3 times per year with replacement as indicated with goal ferritin >50 ng/mL along with a normal hemoglobin level. Labs were repeated 2 months after initiation of oral replacement and showed continued normal levels of iron stores and hemoglobin.

This case presents the importance of considering the diagnosis of iron deficiency when faced with intractable and/or worsening migraines. Patients may not always have a historical feature that would suggest this diagnosis (I.e., this patient's more remote history of menorrhagia) and many cases are without a clear source making ongoing follow up and lab monitoring pertinent to avoiding recurrence of symptoms.

75) A CASE OF HYPERTENSIVE NEPHROSCLEROSIS PRESENTING AS MALIGNANT HYPERTENSION WITH PROTEINURIA

Hassan Zagloul; Prabhav Kenkre, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: Hypertensive nephrosclerosis (HN) is defined as chronic kidney disease caused by essential, nonmalignant hypertension and thought to be the second most common cause of end-stage renal disease (ESRD). It is characterized histologically by intimal thickening and luminal narrowing of the renal and glomerular arteries with concurrent focal segmental sclerosis of the glomeruli. HN can only be confirmed by biopsy revealing these histological characteristics, but it is often diagnosed clinically when kidney dysfunction is seen in patients with longstanding hypertension without evidence suggestive of an alternative diagnosis. Current clinical parameters for HN also include proteinuria <0.5 g/day, left ventricular hypertrophy, and hypertension preceding renal dysfunction. Here we discuss a case of HN in a young female presenting as malignant hypertension with significant proteinuria.

Case Description: A 29-year-old female with a significant medical history of hypertension diagnosed as a teenager, type II diabetes, and medical nonadherence due to financial barriers presented to the ED with cough, dyspnea, and orthopnea for the last several days. Symptoms first began 8 months ago with increasingly blurry vision and frequent headaches. She had not taken her antihypertensive medication nor seen a physician in three years due to losing her insurance. Home blood pressure readings indicated her systolic pressures averaged in the 250s. The patient presented to the ED with tachycardia of 130 bpm and hypertension up to 261/177. Physical exam displayed tachycardia but was otherwise unremarkable. Initial labs were notable for elevated troponin (0.17>>015 ng/mL), BNP (905 pg/mL), creatinine (4.1 from 0.6 mg/dL three years ago), BUN (52 mg/dL) and hypokalemia (2.6 mEq/L) and a normal HgB A1c of 6.6. Urinalysis displayed hematuria (RBC 6-10/hpf), proteinuria (600 mg/dL), and hemoglobinuria (2+). EKG displayed nonspecific ST-T changes and a TTE showed left ventricular concentric hypertrophy with findings consistent of hypertensive cardiomyopathy. She was admitted due to hypertensive emergency and acute kidney injury; potassium was promptly repleted and a nitroglycerin infusion was started with Carvedilol 12.5mg BID administered for blood pressure control. A secondary cause of the patient's hypertension was suspected but an extensive workup following nephrology consultation was unremarkable other than an elevated 24-hour total urine protein (3.18g/24 hours) within a subnephrotic range. No clear etiology for the patient's hypertension was identified. Continued difficulty maintaining appropriate blood pressure control prompted a renal biopsy that revealed hypertensive nephrosclerosis with mild IgA nephropathy.

Discussion: While HN is the presumed diagnosis for 10-30% of patients with ESRD, the role of hypertension as the primary driver of this disease has been recently question considering the increased prevalence of HN despite improved antihypertensive regimens and decreased cardiovascular complications. The pathological changes in HN are not specific to hypertensive kidney injury and can be seen in longstanding CKD of any etiology. This case is a unique presentation of HN as it presents in a patient with malignant hypertension and significant proteinuria outside of the current clinical criteria characterizing HN. It prompts the question if ESRD in the setting of longstanding HTN is truly driven by HTN as opposed to an underlying, poorly understood renal etiology.

76) DELAYED GRAFT FUNCTION EQUALLY WORSENS EARLY OUTCOMES IN KIDNEY RECIPIENTS FROM DONATION AFTER CIRCULATORY DEATH VERSUS BRAIN DEATH DONORS.

Angela Zhou; Suseela Raj; Sandesh Parajuli, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Introduction: While delayed graft function (DGF) is more common after donation after circulatory death (DCD) vs donation after brain death (DBD) kidney transplantation, we sought to determine if risk factors for DGF and post-transplant outcomes differ across donor type.

Methods: We studied all adult kidney deceased donor recipients (DDKTR) transplanted between 2005-2019 at UW Health Transplant Center, stratified by donor type (DBD vs. DCD). DGF was defined as dialysis within the first week after transplantation. Outcomes of interest included DGF, acute rejection (AR), one- year uncensored (GF) and death-censored graft failure (DCGF).

Results: Among 2543 DDKTs, 804 (31%) were DCD. In DBD recipients, older donor age, higher terminal creatinine, higher KDPI, right kidney, prolonged cold ischemia time (CIT), higher recipient BMI, and depleting induction agent were associated with higher risk for DGF, while female recipient and preemptive transplant were protective. Similarly, among DCD, older donor age, higher recipient BMI, and depleting induction were associated with increased risk, while female donor and recipient, as well as preemptive transplant were protective. While DGF was significantly associated with higher risk for AR and GF, these associations did not differ significantly between DBD and DCD in adjusted models: AR (HR: 2.22 in DBD vs 2.37 in DCD; p-interaction=0.65); GF (3.04 vs 2.56; p-interaction=0.47). There were no adjusted DCGF to compare.

Conclusion: Several factors differ between DBD and DCD for risk of DGF, and there is a greater prevalence of DGF among DCD kidney recipients. However, once DGF develops, similarly worsened early outcomes are observed in both groups. Further studies are needed to explore how the risk factors identified here can be mitigated to reduce the risk of DGF development in DDKTs.

77) RISK FACTORS FOR DEVELOPING ADVANCED CHRONIC KIDNEY DISEASE AMONG PANCREAS TRANSPLANT ALONE RECIPIENTS

Emily Zona; Sandesh Parajuli, MBBS; Jon Odorico, MD
University of Wisconsin School of Medicine and Public Health, Madison WI

Background: After successful pancreas transplantation, the progression of histological changes related to diabetic chronic kidney disease (CKD) is delayed or prevented; however, renal function deterioration may still occur. In the setting of pancreas transplant alone (PTA), patients may progress to develop advanced CKD or even end-stage kidney disease (ESKD). This study seeks to identify pre-transplant factors among PTA recipients that predict progression to advanced CKD, defined as eGFR <30 ml/min, or proteinuria > 1gm/gm, or ESKD.

Methods: All primary PTA transplanted at our center between 07/2000 and 03/2022, were included if they had pancreas graft survival for more than two weeks. Recipients were categorized as either having advanced CKD or no advanced CKD at last follow-up. Risk factors associated with developing advanced CKD were outcomes of interest.

Results: 179 PTA recipients were included of which 24 (13%) developed advanced CKD, 14 with ESKD on dialysis, 8 with eGFR < 30, and 2 with proteinuria. Recipients with advanced CKD had lower body mass index, higher pre-transplant serum creatinine, and lower pre-transplant eGFR. Donors of PTA recipients who developed advanced CKD had a higher frequency of hypertension and higher terminal HbA1c, compared to donors of recipients in the no advanced CKD group. There was no significant difference in the post-transplant follow-up interval between the groups at more than 85 months in both groups (p=0.85). By 12 months 1 (4%) pancreas graft failed in the advanced CKD group and 7 (5%) in the non-advanced group. In multivariate analysis, factors associated with increased risk for advanced CKD were higher recipient age (HR: 1.05; 95% CI: 1.0-1.09; p=0.04) and donor with hypertension (HR: 2.91, 95% CI: 1.12-7.51; p=0.03); while higher recipient BMI (HR: 0.83; 95% CI: 0.74-0.94; p=0.004) and higher pre-transplant eGFR (HR: 0.97; 95% CI: 0.95-0.00; p=0.02) were protective.

Conclusions: Important recipient and donor factors predicted a higher risk of developing advanced CKD in PTA recipients. These findings may help guide selection of donors and recipients to minimize the risk of developing CKD in this population.

78) LONG-TERM FOLLOW-UP OF KIDNEY TRANSPLANT RECIPIENTS (KTRS) ADMITTED TO A TERTIARY CARE TRANSPLANT CENTER WITH SARS-COV-2

Emily Zona; Sandesh Parajuli, MBBS
University of Wisconsin School of Medicine and Public Health, Madison WI

Background: Kidney transplant recipients (KTR) are a vulnerable population at risk of severe COVID-19 disease and mortality after SARS-CoV-2 infection.

Aims: We sought to investigate outcomes among KTRs hospitalized at our high-volume transplant center either on the general hospital floor or the ICU.

Methods: We retrospectively describe all adult KTRs who were hospitalized at our center with their first SARS-CoV-2 infection between 04/2020 and 04/2022 and had at least 12 months follow-up (unless they experienced graft failure or death). The cohort was stratified by KTR intensive care unit (ICU) admission. Outcomes of interest included risk factors for ICU admission and mortality, length of stay (LOS), respiratory symptoms at admission, all-cause graft failure at the last follow-up, and death related to COVID-19.

Results: 96 KTRs were hospitalized for SARS-COV-2 infection at our center during the study period. 21 (22%) required ICU admission. The ICU group had a longer hospital LOS (21.8 vs 8.6 days, $p<0.001$) and were more likely to develop graft failure at the last follow-up (81% v 31%, $p<0.001$) compared with the non-ICU group. Additionally, of those admitted to the ICU, 76% had death at last-follow up, and 71% had death related to COVID-19. Risk factors for ICU admission included male sex (aHR 3.11, 95% CI: 1.04-9.34; $p=0.04$). In the multivariate analysis, risk factors for all-cause mortality and COVID-19-related mortality included ICU admission and advanced age at SARS-CoV-2 infection diagnosis. Mortality was highest within a month of COVID-19 diagnosis, with the ICU group having significantly increased risk of all-cause (aHR 11.2, 95% CI 5.11-24.5; $p<0.001$) and COVID-19-related mortality (aHR 27.2, 95% CI 8.69-84.9; $p<0.001$) compared to the non-ICU group.

Conclusions: In this single-center retrospective study of 96 KTRs, ICU admission was associated with negative outcomes including increased risk of mortality, graft failure, and longer LOS. One-fifth of those hospitalized at our center died related to COVID-19, reflecting the impact of COVID-19-related morbidity and mortality among KTRs.


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