May 23rd

Southern San Joaquin Valley
RESEARCH FORUM
5TH ANNUAL REGIONAL GATHERING

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# *Abstract Booklet*

# *May 23, 2024*


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# 5th Annual Southern San Joaquin Valley Regional Research Forum

Welcome to the 5th Annual Southern San Joaquin Valley Regional Research Forum, organized and presented by Kern Medical! We are thrilled to showcase the extensive research, case studies, and quality improvement initiatives undertaken by our dedicated community of medical students, residents, fellows, faculty, and researchers over the past year.

The purpose of this forum is to foster a deep understanding of research and to spotlight the scholarly pursuits within our region. We aim to advance medical science and recognize significant contributions and innovations in healthcare and medical education.

We extend our heartfelt gratitude to all participants and organizers. The achievements showcased in the digital iPosters, oral presentations, and abstract booklet are proof to your unwavering commitment to scholarly excellence. We encourage you to review this abstract booklet to gain deeper insights into the remarkable work being conducted and to learn more about the diverse projects featured at this forum.

We hope that you find the presentations educational and that they inspire you to continue your invaluable contributions to research in the community. Thank you for being a part of this important event and let the spirit of research drive you to new heights!

Sincerely,

Jeff Jolliff, PharmD
Chair, Research Committee
Kern Medical

**Abstract 2024 – 01**
**Coccidioidal Infectious Tenosynovitis – A Case Series**
Shikha Mishra, MD; Jane Park OMS III; Valerie Espinoza, MD; Michelle Fang, PharmD; Leila Moosavi, MD; Carlos D'Assumpcao, MD; Royce Johnson, MD; Rasha Kuran, MD

**Introduction**

Coccidioidomycosis (cocci) is an infection caused by *Coccidioides immitis or Coccidioides posadasii,* a dimorphic fungus that grows in the soil and is commonly found in southwestern California, Mexico, and Central America. It is also known as Valley fever due to the endemicity of *C. immitis* in the San Joaquin Valley. Most patients are asymptomatic, some present with pulmonary symptoms, and less than 3% have dissemination. Tenosynovitis is a rare manifestation of disseminated coccidioidomycosis with limited literature surrounding its diagnosis and treatment, which can lead to misdiagnosis or underdiagnosis. Our aim was to examine the clinical course of coccidioidal tenosynovitis via a case series of three patients.

**Methods**

This was a retrospective case series of three patients at the Valley Fever Institute in Bakersfield, California, with coccidioidal tenosynovitis of the hand and wrist between 2021 and 2024. Patient consent and Institutional Review Board approval were obtained for collection of demographics, clinical, laboratory, operative, and treatment data from electronic health records.

We reviewed cases of coccidioidomycosis between 2021 and 2024 in the Valley Fever Institute database and identified 3 patients with coccidioidal tenosynovitis. All patients had an extended duration of intermittent wrist pain with a palpable growing mass lasting over a year prior to diagnosis of coccidioidal tenosynovitis. Two patients had confirmed pulmonary coccidioidomycosis. One had presumed pulmonary coccidioidomycosis based on incidental CT findings.

All 3 patients had MRI of the wrist with and without contrast with the diagnosis of tenosynovitis and underwent surgery. Intraoperatively, 2 patients had inflammation and thickening of the synovium and 1 had dissolved flexor tendons. Intraoperative cultures of all 3 patients revealed *Coccidioides spp,* 2 of them identified as *C. immitis,* 1 pending identification. One patient had pathology showing rare fungus with spherules and 1 had fungus with spherules with endospores consistent with coccidioidomycosis.

One patient was continued on fluconazole, 1 had adverse reactions to fluconazole and posaconazole and was started on itraconazole, and 1 had failed fluconazole and was switched to isavuconazonium. Of the 3 patients, 1 required intravenous liposomal amphotericin B therapy for pulmonary coccidioidomycosis.

**Conclusion**

Tenosynovitis of the hand and wrist, although rare, is seen in disseminated coccidioidomycosis. Diagnosis is generally made based on clinical suspicion and intraoperative cultures and pathology. There is currently no consensus in the treatment guidelines on management of coccidioidal tenosynovitis, which is challenging and generally requires surgical debridement and extended antifungal treatment.

***For a table summarizing the findings of this case series, contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 02**
**A Case of Primary Mutation Untreated Autosomal Dominant Polycystic Kidney Disease**
Ifeoma Ike, MS IV; Lawrence Okumoto, MD; Greti Petersen, MD

**Introduction**

Autosomal Dominant Polycystic Kidney Disease (ADPKD) is a multisystem disorder commonly caused by genetic mutations in either the PKD1 or PKD2 gene [1-2]. It is typically characterized by bilateral renal cysts, liver cysts, and intracranial aneurysms. The disease can present without the PKD1/2 mutations [4]. We present a 56-year-old female with ADPKD who has no known family history of the condition. She presented with extensive cysts in both the kidneys and liver, resulting in ESLD and ESRD. We explore the potential unique genetic relationship between her disease status and lack of family history, as well as the importance of early intervention for treatment outcomes.

**Clinical Course**

Patient is a 56-year-old female with a past medical history of hypothyroidism and ADPKD who presented

with worsening abdominal distension and shortness of breath. Labs were significant for an elevated BUN and creatinine, with increased urine albumin to creatinine ratio. CT of abdomen showed innumerable cysts in both kidneys and liver. Physical exam findings include severely-distended abdomen with tenderness to palpation of epigastric and suprapubic region. Tolvaptan could not be started due to the patient's GFR below 25. Patient evaluated by nephrology and confirmed to have end-stage kidney disease (ESKD). No family history of ADPKD. Of patient's five children, three diagnosed with ADPKD. One of the five children have a history of ovarian cysts/polyps. She tested negative for mutations in PKD 1 and 2.

**Discussion**

She tested negative for mutation in PKD1 and 2, it's likely this is case De-novo genetic mutation of a variant. De novo mutation is estimated to occur 10% of the time in the ADPKD [5]. In 5% to 10% of patients with apparent ADPKD, no mutation is detected [3]. Paper by Braun et al, found that patients who were family history negative with a suspected de novo mutation resulted in increased total kidney volume, as seen in our patient presentation [3]. Paper by Hopp et al, explored mosaicism with no mutation detected, found that patients with mosaicism in the PKD1 gene had a higher GFR and smaller total kidney volume [6].

**Treatment**

Initial management for ADPKD is ACE-I/ARB medication which preserve kidney function by limiting progression of proteinuria and controlling hypertension. Tolvaptan an ACE-I/ARB, reduce development of cysts and slow down progression to ESKD, but is contraindicated in patients with a GFR of 25 ml/min/1.73 m2 or greater and/or chronic kidney function 30-90%. Definitive treatment for ADPKD is renal transplantation.

**Conclusions**

This case is highlighted due to the unique presentation of this patient in relation to ADPKD. Lack of a family history and negative genetic testing for PKD1 and 2 raises the question if de novo mutations may be linked to rare presentations of ADPKD. Knowing her mutation would be would be beneficial to her children as it can inform them of the type of disease they might have. Testing her children to look for the specific mutation they have would help them make medical and family planning decisions.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 03**
**Fingolimod induced IRIS Syndrome in Multiple Sclerosis Patient with Cryptococcal Meningitis**
Lawrence Okumoto, MD; Shikha Mishra, MD; Tatum Jestila, MD; Rupam Sharma, MD; Rasha Kuran, MD

**Introduction**

Fingolimod, a medication that is used to treat patients with multiple sclerosis (MS), is a sphingosine-one-phosphate receptor modulator. It sequesters lymphocytes in lymph nodes, preventing them from contributing to an autoimmune reaction. Withdrawal of the medication can cause an immune system over reaction such as Immune Reconstitution Inflammatory Syndrome (IRIS). Because this medication suppresses the immune system, it is known to be associated in rare cases with progressive multifocal leukoencephalopathy (PML) and Cryptococcal Meningitis.

Fingolimod induced cryptococcal meningitis occurs in 8/100,000 patients per year, while fingolimod induced IRIS happens in approximately 1/10 patients when this medication is stopped. This patient had a rare occurrence in which the patient had both IRIS and cryptococcal meningitis occurring simultaneously.

**Case Description**

The patient, a 60-year-old male with medical history of MS on Fingolimod, presented to the emergency department with concern of altered mentation and weakness. Initially patient was admitted to the critical care unit and underwent lumbar puncture (LP) which resulted positive for cryptococcus antigen and India ink stain. Subsequently, amphotericin and flucytosine therapy was initiated.

During patient's hospitalization it was determined that patient had developed IRIS secondary to discontinuation of long-term MS therapy (Fingolimod) on admission, and therefore dexamethasone 20mg daily was added, which

resulted in significant clinical improvement of patient's altered mentation. LP was repeated, cultures revealing rare cryptococcus. Amphotericin was discontinued after 1 week upon negative cultures and patient was initiated on fluconazole 800mg for 4 weeks followed by 200mg daily life-long. Throughout hospitalization patient's clinical signs and symptoms improved significantly and the patient was discharged to an acute rehab facility in stable condition.

**Conclusion**

This case illustrates the complications that can arise from the use and discontinuance of Fingolimod. Its use puts the patient at risk for Cryptococcal Meningitis while it can cause IRIS when the medication is discontinued. Clinicians should be aware that a patient can develop both.

***For a list of references for this case report, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 04**

**Series of Iatrogenic Cushing's Syndrome due to Over-The-Counter Supplement**

Rupam Sharma, MD; Cesar Aranguri, MD; Ngon Trang, MD; Melanie Khamlong, MD; Matthew Clarke, MD; Shikha Mishra, MD; Sukhmani Singh, MD; Chandramahanti Sangeeta, MD

**Purpose**

Cushing's syndrome (CS) is a complex disorder marked by the excessive production of cortisol, a hormone vital for regulating various bodily functions. It can result from inappropriate production of either CRH, ACTH or cortisol. This condition can also manifest from prolonged exposure to corticosteroid medications, leading to iatrogenic Cushing's syndrome. Accurate diagnosis and appropriate management are crucial to mitigate the overall health impact of this syndrome.

A growing number of cases of iatrogenic CS secondary to adulterated supplements are being reported. Herein we describe five cases of patients developing iatrogenic Cushing's syndrome due to accidental ingestion of glucocorticoids while taking over the counter medication, "Artri King".

**Methods**

This study was approved by the Kern Medical Institutional Review Board. A retrospective review of both the patient's record was performed. Literature search was conducted on PubMed and Google scholar.

***Case 1:*** A 44-year-old woman with multiple nonhealing bilateral lower extremity ulcers up to 6 cm referred for uncontrolled diabetes who presented with Cushingoid appearance.

***Case 2:*** 47-year-old well appearing male with a morning cortisol level of 1.7 mcg/dL obtained as part of a weight loss consult.

***Case 3:*** A 70-year-old woman with random cortisol 0.8 mcg/dL as ordered for workup of resistant hypertension.

***Case 4:*** A 68-year-old female with history of morbid obesity found to have an AM cortisol of less than 0.5 mcg/dL (Ref. range 4.32 to 22.4) with an ACTH less than 5 pg/mL (Ref. range 6 to 50).

***Case 5:*** 43-year-old male with acute respiratory failure requiring intubation, once extubated experienced post intubation complications and found to have adrenal insufficiency.

**Discussion**

These cases show the wide range of presentation of patients who may be taking exogenous glucocorticoids. In all cases the patients were unaware of the deleterious effects of the "Artri King" supplement and, as such, did not initially disclose the use of the supplement since it is marketed as anti-inflammatory supplement. For patients using these supplements chronically a steroid taper was warranted to avoid adrenal insufficiency from abrupt discontinuation.

**Conclusion**

In conclusion, these cases reinforce the value of a detailed medication reconciliation including over-the-counter, complementary and alternative medications at a patient's presentation. In any case of iatrogenic Cushing's syndrome, a safe steroid taper and discontinuation of supplemental health products including herbal supplements is essential, as many may include hidden ingredients including undeclared glucocorticoids. Healthcare practitioners

should be aware of the growing use of "Artri King" and seek resources to safely wean patients from these agents.

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**Abstract 2024 – 05**

**Multi-Drug Resistant Elizabethkingia Anophelis Bacteremia Initially Treated and Identified as Elizabethkingia Meningoseptica: Case Report and Literature Review**

Jacqueline Uy Majella, MD; Royce Johnson, MD; Shikha Mishra, MD; Myles Melamed, MS; Jorge Luege, MD; Chike Nwebeh, MD; Stephanie Garcia, MD; Leopoldo Hartmann, MD; Leila Moosavi, MD

**Introduction**

Elizabethkingia anophelis, an emerging multi–drug resistant pathogen, poses a global health concern due to its infectious capabilities in susceptible individuals. This report traces the taxonomy of E. anophelis, and its distinction from E. meningoseptica, and emphasizes its antimicrobial resistance. The bacterium is associated with various clinical presentations, including bacteremia, meningitis, and urinary tract infections, and a high mortality rate when treated with incorrect antibiotics. We present a case involving a 59-year-old male with comorbidities who presented with septic shock and encephalopathy. Challenges of multi-drug resistance and vancomycin sensitivity are discussed, and successful treatment with ciprofloxacin was achieved. E. anophelis poses a growing threat, necessitating ongoing research and surveillance to develop effective management strategies.

**Case Description**

A 59-year-old man with a history of uncontrolled type 2 diabetes on insulin, methamphetamine use (IV use 5 years prior) and hepatitis C presented with septic shock and encephalopathy. The patient was in his usual state of health until his family noted him more somnolent over four days until they called EMS.

In the emergency department, the patient was normothermic but responsive only to painful stimulation and hypotensive, necessitating fluid resuscitation and pressors. Physical exam revealed scleral icterus and lower extremity edema with stasis changes. Laboratory results revealed absolute neutrophilia (14,500/mcL), lactate 4.8 mmol/L, procalcitonin 4.42ng/mL, and transaminitis (AST 178 U/L, ALT 92 U/L). Urinalysis revealed pyuria and hematuria. Urine and blood cultures were obtained, and he was admitted to the ICU and started on empiric vancomycin and cefepime. Within twelve hours, initial aerobic blood and urine cultures grew gram-positive cocci and gram-negative rods respectively; his antibiotic regimen was continued.

Over the next two days, he remained stuporous, initial shock resolved, and he was transferred to the medicine floor. Abdomen ultrasound revealed an enlarged nodular liver, and echocardiogram was negative for vegetations. CSF analysis showed increased protein levels. Finalized initial and repeat blood cultures, analyzed by Vitek 2 (BioMérieux), grew Elizabethkingia meningoseptica and Staphylococcus epidermidis, and urine cultures grew E. meningoseptica. Antimicrobial susceptibility testing for E. meningoseptica revealed resistance to multiple antibiotics, and showed sensitivity to ciprofloxacin (MIC of 1), levofloxacin (MIC of 1) and norfloxacin (MIC of 4).

The patient's antibiotic regimen was switched to ciprofloxacin PO 750mg BID for 14 days. After two days of ciprofloxacin therapy, his urine and blood cultures sterilized, his mentation significantly improved, and the patient was discharged to a skilled nursing facility.

Isolates of the microbe were then sent off for analysis using MALDI-TOF mass spectrometry with an extended spectrum database and were determined to be Elizabethkingia anophelis.

**Discussion & Conclusion**

In summary, this case report highlights the growing threat of Elizabethkingia anophelis as an emerging multi-drug resistant pathogen and the challenges encountered when dealing with this microbe. The challenges in accurate identification, proper antibiotic selection, and the potential for antibiotic resistance highlight the need for increased awareness of this species and tailored management strategies. Ongoing research and surveillance are imperative to address the global challenges posed by this bacterium and protect public health.

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**Abstract 2024 – 06**

**Atypical Presentation of Meckel's Diverticulitis: A Case Study**

Lev Libet, MD; Maria Jose Araujo, MD; Salma Arechiga, RA

**Introduction**

Meckel's diverticulum is the most common congenital abnormality of the gastrointestinal system. It is caused by incomplete obliteration of the vitelline duct during the fifth week of fetal development, leading to a true diverticulum containing all layers of the intestinal wall. Diverticulitis can result from obstruction of the opening, leading to bacterial overgrowth and inflammation similar to appendicitis. If left untreated, it can progress to perforation. Here, we present a case of Meckel's diverticulum in a relatively older pediatric patient.

**Case Description**

We present a case of a 10-year-old male who presented with periumbilical pain that migrated to the right lower quadrant pain. When ultrasound could not find evidence of appendicitis, computer tomography (CT) of the abdomen and pelvis revealed Meckel's diverticulitis.

**Discussion**

This case highlights how easily Meckel's diverticulum can be missed on presentation. Meckel's diverticulum was not considered as part of the differential diagnosis, and it was not discovered until a CT of the abdomen was ordered to evaluate for appendicitis. It is nearly clinically impossible to differentiate Meckel's diverticulum from appendicitis without either imaging or direct visualization during surgery.

**Conclusion**

Patients can remain asymptomatic from Meckel's diverticulum until they begin to suffer from complications such as obstruction, perforation, and diverticulitis. It should remain on the differential in older children and adults presenting with gastrointestinal complaints such as pain and rectal bleeding.

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**Abstract 2024 – 07**

**Page Kidney, An Incidental Finding while Evaluating Perinephric Hematoma**

Rupam Sharma, MD; Timothy Yanni, DO; Kajal Patel, MS IV; Leila Moosavi, MD

**Purpose**

Page kidney is a rare cause of secondary hypertension with 100 reported cases in the literature and 28 reported cases since 1991. Compression of the renal parenchyma by perirenal collagenous hulk results in a decrease in intrarenal arterial pressure leading to microvascular ischemia and a decreased renal perfusion pressure. This results in hyperreninemia and subsequent increased angiotensin II. Herein presented is a patient who developed page kidney three years post a nephroureteral stent placement which was discovered incidentally during workup for a perinephric hematoma.

**Methods**

This study was approved by the KM IRB. A retrospective review of both the patient's record was performed. Literature search was conducted on PubMed.

**Case Report**

This patient is a middle-aged female with medical history of right ureteral stent placement due to hydronephrosis who presented to the ED with chief complaint of nausea, vomiting, and sudden right lower quadrant and right flank pain for one day. CT abdomen and pelvis with contrast revealed large right perinephric hematoma along with presence of right nephroureteral stent. The 11.1 x 7.5 x 13.7 cm perinephric collection was heterogenous and hyperdense raising concern for perinephric hematoma versus perinephric abscess creating a mass effect on the renal parenchyma. Thickening of the right renal pelvic wall and inflammatory changes in the right kidney and retroperitoneum were additionally noted.

The patient was initiated on ceftriaxone and metronidazole given the possibility of an abscess. Renal angiography was completed to rule out active source of bleeding. Imaging confirmed a right perinephric hematoma with capsular distension of

the fibrocollagenous hulk surrounding the kidney resulting in page phenomenon.

Throughout the patient's hospital course, she remained hemodynamically stable with preserved kidney function, without any notable bleed or low hemoglobin levels. On discharge, the patient's hemoglobin was 7.8 g/dL, ferritin was 60 ng/mL, and total iron binding capacity was 207 ug/dL. The patient's creatinine was 0.74 mg/dL at discharge. Additionally, patient was normotensive for majority of the hospital course except for the last 48 hours during which time patient was found to be hypertensive with readings of systolic blood pressure >140 mmHg requiring intervention. The patient was eventually discharged on lisinopril 10 mg in stable condition and outpatient follow up.

**Discussion**

It is postulated that the patient's fibrous capsule formed due to chronic inflammatory changes due to her indwelling double-J catheter. They are usually removed within 6 weeks of placement however; this patient's catheter was present for three years and resulted in significant calcification surrounding it. The presence of this patient's nontraumatic and spontaneous perinephric hematoma resulted in discovered of this pseudocapsule. Perinephric hematomas usually resolve spontaneously within 3 weeks. If spontaneous reabsorption does not occur and if fluid aspiration is insufficient this requires a capsulectomy to alleviate the compressive force on the kidney and cure the resultant hypertension. In complicated cases a nephrectomy produces definitive resolution of the hypertension. The decision on management will continue to evolve moving forward as the size of the hematoma and the compressive effects of it and the capsule are tracked.

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**Abstract 2024 – 08**
**Right Upper Quadrant Rectus Sheath Hematoma: A Diagnostic Dilemma**
Rupam Sharma, MD; Cesar Aranguri, MD; Timothy Yanni, DO; Greti Petersen, MD

**Introduction**

Rectus sheath hematoma (RSH) is a medical condition characterized by the accumulation of blood within the fibrous covering of the abdominal muscles, known as the rectus sheath. Typically caused by trauma, strenuous activities including vigorous cough or anticoagulation medication use, this condition results in localized pain, swelling and a palpable mass in the abdominal area most commonly infra-umbilically. As the blood collects within the sheath, it can lead to compression of nearby structures, potentially causing nausea, vomiting or even low blood pressure in severe cases. Herein described is a unique case of abdominal rectus sheath encounter presented in right upper abdominal quadrant.

**Summary of Results**

A 49-year-old Latinx male with medical history of hypertension presented to the emergency department with progressively worsening, acute onset right upper quadrant abdominal pain for one day. The night prior to patient's presentation he awoke with pressure-like, non-radiating right upper quadrant abdominal pain. His pain initially was 5/10 in intensity which progressively worsened to 10/10 at presentation. Coughing and movement aggravated the pain and he denied any alleviating factors. He denied any trauma or associating symptoms including nausea, vomiting, constipation or diarrhea. Patient stated this was his first episode of such pain. He experienced an episode of dry, violent cough with epigastric/abdominal pain two weeks prior to his presentation. Patient was initially hypertensive at presentation with blood pressure 197/134, regular rate and afebrile.

Initial laboratory workup was unremarkable with good renal function, no elevation of LFTs. Abdominal ultrasound was initially performed which revealed hepatic steatosis without other significant findings. Following which, abdominal computed tomography (CT) with contrast was done which demonstrated dilated vascular structures with an enlarged upper right rectus abdominal muscle suggesting active bleeding. Abdominal magnetic resonance imaging (MRI) with and without contrast was then obtained revealing moderate hematoma in the right upper rectus abdominis muscle without definite enhancing underlying mass. As per computed tomography angiography (CTA) abdomen, a moderate right rectus sheath hematoma about 11x4.5x10cm without definite active extravasation of arterial or urinary contrast was found. Patient's hemoglobin and hematocrit levels remained stable >11.0g/dL throughout hospitalization.

Patient was discharged home in stable condition with abdominal binder, restrictions on strenuous activity and heavy lifting, stool softeners to further avoid abdominal pressure.

**Conclusions**

Rectus sheath hematoma is an uncommon cause of right upper quadrant acute abdominal pain. Amongst the differentials of right upper quadrant pain including cholecystitis, hepatitis, peptic ulcer diseases or pancreatitis to name a few, rectus sheath hematomas should be considered. RSH is a rarely seen pathology and often misdiagnosed as acute abdomen that may lead to unnecessary laparotomies. Computerized tomography must be chosen for definitive diagnosis. Several case series have demonstrated that around 80% of patients may be managed with no invasive intervention, including rest, ice, compression, and analgesia.

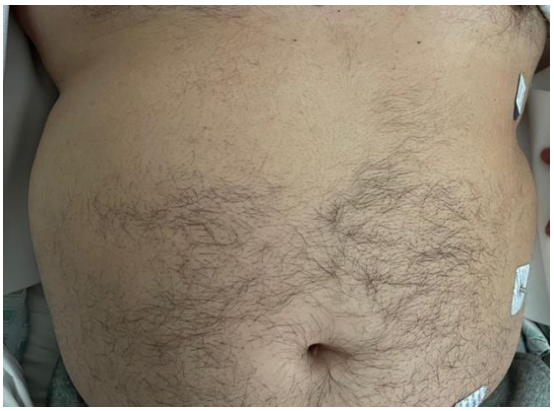

**Image 1: Patient's abdomen.**

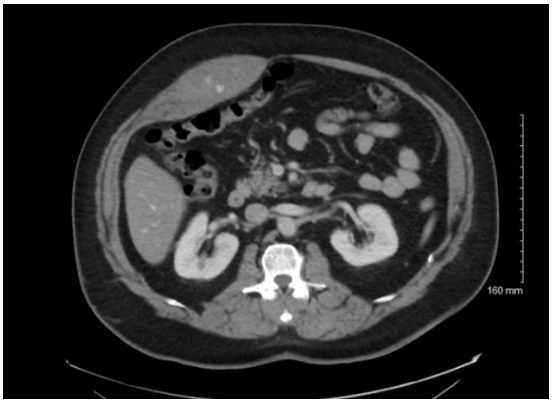


**Image 2: CT Abdomen & Pelvis w/ contrast. Dilated vascular structures with an enlarged upper R. rectus abdominal muscle suggesting active bleeding.**

**Abstract 2024 – 09**

**Holoprosencephaly on Ring Chromosome 18: A Case Report**

Vy Nguyen, OMS III; Kevin Chen, OMS III; Anna Stewart, MS IV; Jesse Lamb, MS IV; Thiagarajan Nandhagopal, MD

**Introduction**

Ring Chromosome 18 is a rare condition characterized by the loss of genetic material from one or both ends of chromosome 18 and the joining of the chromosomal ends to form a ring (1). Associated symptoms and findings vary greatly depending on the size of chromosomal loss, stability of rings, occurrence of cell lines exhibiting monosomy and secondary aneuploidy, and presence of mosaicism (2). Most common presentations of this disorder include mental retardation, hypotonia, repeat infections during the first years of life, and craniofacial abnormalities.

**Case Description**

This is the case of a 5 years old female born full term with low birth weight to a 37-year-old G5P4 mother. The newborn examination was remarkable for dysmorphic features such as rocker-bottom feet, microcephaly, patent foramen ovale as well as failure of hearing screen and failure to thrive. Karyotype testing was significant for r(18)(p11.2q22) with chromosomal microarray revealing a deletion of more than 40%. While numerous genes are deleted, the most notable is that of TGIF1 which is associated with holoprosencephaly (HPE). Patient's single central incisor raises suspicion for some degree of holoprosencephaly syndrome with pending MRI results.

**Discussion & Conclusion**

Holoprosencephaly (HPE) results from failure or incomplete forebrain division early in gestation and is the most common forebrain malformation (8) with a high birth prevalence ranging between 1 in 8,000 to 1 in 16,000 live births (4). Despite the high birth prevalence of holoprosencephaly, its association with trisomy 18 is between 1-2% (5) with only two cases reporting the connection with ring chromosome 18 (6,7). The etiology of HPE is multifactorial, but there have been multiple HPE-

associated genes that have been identified, including TGIF located on chromosome 18p11.3 (8).

Patients with TGIF deletions were found to have manifestations beyond the craniofacial and neuroanatomical features associated with HPE, with the most common being microcephaly, and with others like hypotelorism and single maxillary central incisors that are seen in our patient. (8). Given the systemic burden of such a complex disorder as seen in ring chromosome 18, especially with a significant chromosomal deletion of 40%, the necessity of chromosomal investigation and a comprehensive physical exam is essential to better understand the mechanism underlying various clinical phenotypes and to allow for better management strategies within a multidisciplinary team.

***For a list of references cited in this case report, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 10**
**Are You Dry? Urethral Bulking Agent Retrospective Review**
Alicia Toncar, DO; Breeana Hernandez, MS IV; Yufan Brandon Chen, MD

**Purpose of Study**

The purpose of this retrospective review was to evaluate the clinical treatment efficacy of Bulkamid urethral injections for women with stress urinary incontinence (SUI) or mixed urinary incontinence (MUI).

**Introduction**

Urinary incontinence (UI), a common condition in women characterized by involuntary loss of urine, can significantly impact a woman's quality of life and lead to other medical conditions such as metabolic disorders or anxiety and depression. Bulkamid is a novel minimally invasive surgical treatment for SUI and MUI. Kern Medical was the first in the county to offer Bulkamid injections since 2022.

**Methods**

This was an Institutional Review Board approved retrospective cohort study evaluating patients treated with a urethral bulking agent, Bulkamid, for SUI or MUI (with predominant stress incontinence symptoms) from August 2022 to August 2023 at Kern Medical. All patients who received Bulkamid were included in the study and those without adequate follow up were excluded from the analysis. The primary outcome was treatment success, defined as either patient reported high satisfaction, resolution of incontinence, or subjective improvement by 70% or greater.

The secondary outcome included post-operative complications including voiding dysfunction and urinary tract infection (UTI) within 4 weeks of the procedure. Patient characteristics were assessed by chart review, and included age, body mass index (BMI), race, ethnicity, parity, urinary incontinence indication, number of Bulkamid injections, prior incontinence surgery, prior hysterectomy and other gynecologic non-urinary surgeries performed concomitantly.

**Results**

A total of 49 patients received Bulkamid urethral injections from August 2022 to August 2023. Patient characteristics included a mean age of 52 (SD 11.6), body mass index 31.3 (SD 5.99), 48 of white race (98%), of which 34 (69%) patients identified as Hispanic ethnicity. Of our patients, 28 (57%) had SUI and 21 (43%) had MUI. One patient was lost to follow up. For the primary outcome, 36 patients (75.0%) reported high satisfaction, symptom resolution, or subjective improvement of symptoms by 70% or greater. There was no difference in outcomes among those with SUI or MUI (Fisher Exact Test, p=0.75). Two patients (4.27%) required a temporary Foley catheter for post-operative urinary retention and 3 patients (6.25%) developed UTIs, which treated with antibiotics.

**Conclusion**

Bulkamid urethral injections are an effective treatment option for SUI and MUI, with good chances of success and low rates of complications. Women in the community should be screened for urinary incontinence and offered this therapy when appropriate.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 11**
**Conventional Laparoscopic vs. Multi-Degree of Freedom Articulating Instruments in Minimally Invasive Surgical Suturing**
Alexis Samples, OMS III; Austin Garcia, MD; Maggie Jiang, DO; Yufan Brandon Chen, MD

**Introduction**

The ArtiSential laparoscopic needle driver is a novel multi-degree of freedom laparoscopic instrument. There have been no previously published studies assessing the efficacy of the ArtiSential instrument compared to conventional (straight stick) laparoscopic instruments.

**Purpose of Study**

The primary objective of this study was to compare knot tying times using a conventional laparoscopic needle driver versus the ArtiSential needle driver during a laparoscopic sacrocolpopexy procedure, whereby several knots are tied to implant mesh during the surgery. Secondary outcomes compared the times of each knot tying component (needling time, surgeon's knot, square knot #1, square knot #2) among instruments.

**Methods**

This study was IRB approved and registered on ClinicalTrials.gov (ID NCT06050161). Patients were recruited if they were scheduled to undergo a laparoscopic sacrocolpopexy procedure. A power analysis determined that 32 knots were required to have an 80% chance of detecting, with a significance level of 5%, a decrease in the knot tying time from 80 seconds by the conventional laparoscopic instrument to 60 seconds by the ArtiSential instrument. During the surgery, half of the knots were tied with 2 conventional laparoscopic instruments, while the other half were tied with an ArtiSential instrument in one hand and a conventional laparoscopic instrument in the other. The knots were tied next to each other, as to avoid any biases related to knot laterality. The same surgeon performed all the knot tying. Each knot consisted of an 0-0 Gortex suture on a CV2 needle with a surgeon's knot followed by 2 square knots. Knot time started when the needle entered the tissue and ended when the 2nd square knot was tied down. All cases were recorded, and 2 reviewers evaluated the videos, determining the knot tying times by time stamps. T tests were performed to compare times between the groups.

**Summary of Results**

Two patients undergoing laparoscopic sacrocolpopexy were recruited. A total of 32 knots were performed during these cases, 16 with the conventional laparoscopic instruments and 16 with the ArtiSential instruments. Mean time for knots tied with the ArtiSential needle driver was 66 sec (SD 14 sec). Mean time for knots tied with the conventional laparoscopic instruments was 119 sec (SD 43 sec). The difference was statistically significant ($p<0.01$). All knot tying components were performed faster with the ArtiSential needle driver compared to conventional instruments (all p values $<0.05$).

**Discussion**

Knots tied with the ArtiSential needle driver were performed significantly faster compared to the conventional laparoscopic instruments. The difference in performance was seen in all components of the knot tying process, such as needling time, surgeon's knot, and each square knot.

**Conclusion**

Using the ArtiSential multi-degree of freedom laparoscopic instrument nearly halved the time required for knot tying during laparoscopic sacrocolpopexy compared to conventional laparoscopic instruments. This novel instrument has potential benefits for improving efficiency and patient outcomes in minimally invasive surgery.

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**Abstract 2024 – 12**
**Plain Gut vs. Vicryl: Post-Operative Cesarean Section Wound Complications in Obese Patients with Differing Subcutaneous Closure Sutures**
Anthony Poles, MD; Lola Loeb, MD; Tejasvi Ayyagari, MS III

**Introduction**

The study was to evaluate the closure technique of closing subcutaneous tissue >2 cm in depth in patients with BMI >30 with differing types of absorbable sutures. We used natural plain gut and

multifilament Vicryl as these are the two most used sutures in our department.

**Objective**

A retrospective study evaluating the post operative course for patients with BMI >30 that underwent cesarean section and subcutaneous closure using Vicryl or plain gut suture. The patients were followed until the 6 weeks post operative period and/or until complication course was completed. We looked at complications that include superficial wound dehiscence, infection, need for IV antibiotics and inpatient admission, wound debridement or alternative complications resulting from wound closure. A total of 754 cesarean sections were performed from December 30, 2019 to December 31, 2020.

**Hypothesis**

Subcutaneous closure with Vicryl suture with lead to less post operative subcutaneous abscess formation, seroma or hematoma leading to need for readmission to hospital for antibiotics, surgical debridement or drainage.

**Null Hypothesis**

There is no difference in subcutaneous closure suture and rates of post operative wound complications.

**Inclusion Criteria**

Patients who underwent cesarean section between December 30, 2019 and December 31, 2020 at Kern Medical. All patients with BMI >30 (Class I obese or greater) and had subcutaneous closure with either Vicryl or Plain Gut suture.

**Exclusion Criteria**

Patients who had not received prophylactic antibiotics within 60 minutes of cesarean delivery and before skin incision, or chlorhexidine-alcohol for skin antisepsis with 3 minutes of drying time before incision. Post cesarean section wound complications based on BMI >30 and the type of subcutaneous closure and suture used.

**Methods**

The length of the study was October 2019 to December 31, 2020 for timing of the cesarean section and follows each patient until their 6-week post op visit. This was a Retrospective study. We analyzed the data using odds ratio initially, however we ended up using a bootstrapped chi-squared test with 20,000 replicates. This very closely replicates an exact test without the restraints required for a Fisher's Exact test (typically difficult to justify).

**Discussion**

The study found no difference by suture type in subcutaneous closure methods and we were unable to reject the null hypothesis. Our research did find that if a patient is not complicated by a hemorrhage, an infection is unlikely. Corresponding, if a patient has an infection, they are 4x more likely to be complicated by a hemorrhage. Our data also revealed when race is a variable, white patients are 3x more likely to have an infection versus Hispanic patients.

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**Abstract 2024 – 13**
**Spontaneous Intercostal Hematoma in an Adult Patient with Amyloidosis**
Edward Pak, MD; Larissa Morsky, MD

**Introduction**

Intercostal hematomas have been observed in trauma, patients with underlying coagulopathies, or severe cough [1-4]] however spontaneous intercostal hematomas are rare. It has shown an association with neurofibromatosis, Ehler's Danlos syndrome, tumor, and aneurysms. We present a case highlighting the clinical presentation, diagnostic workup, and management of a spontaneous extra pleural thoracic hematoma secondary to intercostal arterial bleeding in a middle-aged male with a history of amyloidosis.

**Case Description**

A 39-year-old male with a past medical history of end stage renal disease secondary to amyloidosis on hemodialysis, as well as familial Mediterranean fever was evaluated for a painful mass on the right side of his chest, associated with mild shortness of breath.

The patient denied any recent trauma, anticoagulant medication use, or known bleeding disorders. Physical examination revealed a fluctuant, tender mass to the right thoracic back adjacent to the scapula. Bedside ultrasound demonstrated anechoic fluid collection. Labs were significant for hemoglobin of 9.8 g/dL. A CT angiogram of the chest with contrast demonstrated a right posterior lateral chest wall slightly hyperdense collection measuring 15 x 9 x 4 cm favoring an intramuscular hematoma which was not present on a prior CTA chest performed 2 months prior.

Due to a high clinical suspicion for an active bleed, interventional radiology was consulted and was found to have pseudoaneurysm with focal bleed in the right lateral thoracic cage, directly fed by the right 6th and 7th intercostal arteries and indirectly filled through the 5th intercostal artery. Successful selective embolization of the right fifth, sixth and seventh intercostal arteries was performed.

**Discussion**

Spontaneous thoracic hematomas originating from intercostal arterial bleeds are rare, and their etiology remains poorly understood and can be seen in a wide range of pre-existing conditions. This case underscores the importance of considering this diagnosis in patients presenting with a painful, enlarging mass in the absence of trauma. In this case, the CT angiogram of the chest demonstrated a large hematoma, however no conclusive evidence of active bleeding was mentioned by the radiologist. There was a high clinical suspicion for ongoing bleed due to the rapidly expanding size of the hematoma and thus interventional radiology was consulted. Although there is no established method of treatment, In the existing literature, angiogram and embolization has been the preferred and effective modality of treatment [5][6].

This patient's history of amyloidosis likely predisposed him to a spontaneous arterial rupture. Bleeding in amyloidosis frequently occurs in the absence of abnormalities of clotting tests, suggesting that hemorrhage is most often due to amyloid infiltration of blood [7]. Timely recognition and accurate diagnosis, aided by advanced imaging techniques and interventional radiology, is crucial for successful management as hematomas can lead to respiratory compromise, hypovolemic shock, and increased morbidity.

**Conclusion**

We present a unique case of a patient with a spontaneous thoracic hematoma secondary to an intercostal arterial bleed. This report highlights the significance of prompt diagnostic evaluation and multidisciplinary collaboration in managing such cases effectively. Further research is warranted to better understand the underlying mechanisms, associations, and optimal management strategies for this uncommon clinical entity.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 14**

**Analysis Of Physician and Hospital Reimbursements for Breast Reconstruction**

Elizabeth Evers, MS IV; Sarah Thomas, OMS III; Essam Hashem, MS IV; Navraj Toor, RA; Ibrahim Alhumaidi, RA; Wong Moon, MD

**Introduction**

Breast reconstruction is the third most common reconstructive surgery done by plastic surgeons; most of these reconstructions use implants [1]. One factor limiting access to health care is insurance reimbursement for surgery. Autologous reconstruction is labor intensive with poor reimbursement rates [2].

There is limited data regarding hospital charges versus collections or physician charges versus collections [3]. The purpose of this study is to determine the costs and reimbursements for the operating room and physician at a county hospital.

**Methods**

A retrospective review of charges and collection was completed using the CPT codes 19357 (expander) and 19042 (delayed implant) from 10/2018 to 10/2023. The charges and collection were obtained for both the operating room and physician. The data was collected for all procedures completed on the day of the surgery and specifically for their corresponding code.

**Results**

Most of the patients had either Managed Medicaid (31%) or Medicare (24%) insurance. The delayed implant reconstruction with combined procedures had a mean operating room charge of $15,925.48 and physician charge of $8,730.31. The average reimbursement from insurance for the operating room and physician were 17% and 12% of the charges, respectively. The mean length of stay was 0 days. The expander placement with combined procedures had an operating room charge of $46,282.68 and physician charge of $9,587.51. The mean reimbursement from insurance for the operating room and physician were 20% and 16% of the charges, respectively. The mean length of stay was 0.6 days. The mean collection for CPT code 19357 and 19042 were $722.63 (16%) and $462.10 (16%), respectively. The Unmanaged Medicaid physician reimbursements were denied.

**Conclusion**

Overall, insurance companies have control over the reimbursement of procedures. Our results show poor physician reimbursement rates, especially for unmanaged Medicaid patients. Without reimbursement a surgeon's ability to provide the most common form of breast reconstruction may be limited in these patients leading to even greater disparities between privately insured and government-sponsored patients [3].

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 15**
**Bladder Stone on Point-Of-Care Transabdominal Ultrasound**
Salma Arechiga, RA; James Rosbrough, MD; Ajit Panag, MD

**Introduction**

Bladder stones are a relatively uncommon diagnosis, however patients with chronic urinary retention or that require indwelling urinary catheters are at a higher risk of developing them. Although the gold standard for diagnosis of bladder stones is cystoscopy, previous studies have shown sensitivities and specificities approaching 60% and 100% respectively of transabdominal ultrasound (7), which is easily and rapidly obtained in the emergency room.

**Case Description**

A 55-year-old female with PMH of nephrolithiasis status-post left ureteral stent in 2022 who presented to the emergency department for 2 weeks of pelvic pain that had acutely worsened 3 days prior. It was associated with nausea and dysuria. She did report that she never followed up with urology for removal of her ureteral stent.

Her exam was significant for tachycardia and tenderness in the suprapubic region. She was unable to tolerate a pelvic exam or trans-vaginal ultrasound despite multiple doses of fentanyl. Urinalysis was significant for moderate blood, positive nitrites, moderate leukocyte esterase and many bacteria. Urine culture later grew pansensitive Proteus species and ESBL E. coli resistant to trimethoprim/sulfamethoxazole but sensitive to meropenem.

Point-of-care transabdominal ultrasound showed a large, hyperechoic circular structure within the bladder, later confirmed to be a bladder stone. On cystoscopy, it was found to measure 5cm. She underwent laser lithotripsy and her retained ureteral stent was removed. Unfortunately, the patient eloped the next morning, and has not followed up in our health system.

**Discussion**

Bladder stones are a relatively uncommon diagnosis, making up only 5% of all urinary stones. (3) They are mostly associated with dietary factors in developing countries. (4) The primary cause of bladder stones in developed nations is urinary stasis, most commonly from benign prostatic hyperplasia and neurogenic bladder, although cases have also been attributed to urethral stricture and malignancy. Stones may migrate from kidneys and serve as a nidus of growth.

Additionally, any foreign body in the bladder, such as a retained stent, sutures, or pieces of a torn indwelling urinary catheter balloon can also accrue layers and become stones. (2) Chronic bacterial infection also increases the risk of bladder stone formation, especially when coupled with urine alkalinization caused by urease-producing Proteus

species. (5) Patients will have symptoms ranging from hematuria, dysuria, and a weak urinary stream. (2) Calcified and uric acid stones will both appear on CT and ultrasound (6). On trans-abdominal ultrasound, stones will show up as a hyperechoic structure with shadowing.

Patients can be treated with oral medications and bladder irrigation. Cystolithotomy is reserved for larger stones. Smaller stones can be treated with endourologic fragmentation. (2) Patients with bladder stones should follow with urology to prevent recurrence.(2)

**Conclusion**

Although bladder stones are rare, physicians should keep this diagnosis in mind in patient presenting with concerning symptoms, especially those with urinary retention and foreign bodies such as indwelling catheters and retained stents. Point-of-care ultrasound is a quick way to make this diagnosis at bedside.

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**Abstract 2024 – 16**

**A Case of a Monocular Impaired Vision**

Lev Libet, MD; Edward McCrink, DO; Lawrence Liu, MD; Salma Arechiga, RA; Jennifer Ballard, RA

**Introduction**

This case is remarkable for an atypical presentation of anterior uveitis with chylous vitreous humor likely secondary to underlying hypertriglyceridemia. Anterior uveitis is the most common type of uveitis and may be the consequence of underlying metabolic disease [2]. When diagnosing ophthalmic conditions, considering the onset of symptoms, duration of pain, laterality, and anatomical location is crucial to properly identify the etiology [3]. Serum laboratory evaluation may be used as an adjunct to differentiate potential etiologies of atypical ocular disease. Elevated plasma triglyceride levels over 2,000 mg/dL are where chylous and lipemia retinalis have occurred [5]. Symptoms associated may include blurry vision, eye redness, photophobia, headache, nausea, and vomiting [3]. Proper visual examination of the affected eye may show limited depth perception and visual field deficits due to ocular or optic nerve pathology [4].

**Case Description**

We present a case of a 30-year-old female who presented with left eye pain and blurry vision which persisted for 5 days. Physical exam was notable for visual acuity of OS 20/100, OD 20/40, OU 20/50, conjunctival injection and a white milky appearing anterior chamber with inability to visualize the pupil. Intraocular pressure was 10 bilaterally, and there was no uptake with fluorescein staining. Bedside point-of-care ultrasound was negative for retinal detachment and vitreous hemorrhage. Diffuse xanthomas were noted in the bilateral upper and lower extremities. After ophthalmology evaluation, the patient was diagnosed with anterior uveitis and chylous vitreous fluid likely secondary to hypertriglyceridemia.

**Discussion**

Anterior uveitis is typically caused by viral infections, trauma, or inflammatory disease. In this case, the patient's chylous vitreous humor and diffuse xanthomas noted on the extremities are distinctive presentations of hyperlipidemia. Complete blood count, complete metabolic panel, ESR, CRP, and blood cultures were unremarkable. The lipid panel revealed a triglyceride level greater than 4,000 mg/dL and a cholesterol level of 423 mg/dL. In addition to fenofibrate to manage hypertriglyceridemia, the patient was treated with cyclopentolate, neomycin/polymyxin B/dexamethasone, ketorolac ophthalmic solution, and triple antibiotic ointment per ophthalmology recommendation. Once the systemic triglyceridemia levels are managed, the patient's optic symptoms are likely to improve.

**Conclusion**

Prompt recognition and diagnosis of anterior uveitis and chylous vitreous fluid is important to provide appropriate ophthalmic care and reduce complications. If anterior uveitis and chylous vitreous fluid are left untreated, permanent vision loss could occur. Therefore, it is important to consider anterior uveitis and chylous vitreous fluid when patients present with a chief complaint of vision loss, headache, and eye pain to ensure prompt management.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

**Abstract 2024 – 17**
**A Multidimensional Cross-Sectional Longitudinal Analysis of Clinical Evaluation Manifestations in 109 Individuals with Mutations of the Valosin-Containing Protein Gene**

Leepakshi Johar, OMS IV; Kristie Chu, MS; Keira Hundhausen, MS; Alyaa Shmara, MS; Merwa Hamid, BS; Virginia Kimonis, MD

**Introduction**

Inclusion body myopathy (IBM) associated with Paget disease of the bone (PDB) and frontotemporal dementia (FTD) (IBMPFD), or Multisystem Proteinopathy (MSP1) is an autosomal dominant degenerative disorder caused by >80 pathogenic variants in the valosin-containing protein (VCP) gene. VCP disease comprises other less common phenotypes including amyotrophic lateral sclerosis, Parkinson's disease, cardiomyopathy, sensory motor axonal neuropathy, and sphincter disturbance. VCP functions as a chaperone for proteasomal protein degradation and autophagic degradation of misfolded protein, leading to aggregation.

**Purpose of Study**

We aim to explore the genetic causes of muscle disease. We are particularly interested in muscle disorders that occur in combination with diseases of bone that appear to be passed on from generation to generation. This study uses standard clinical procedures, but they are being done for research purposes.

These procedures include: physical and neurological examinations, dynamometry, blood draws for lab testing, urine analysis, MRI/MRS (magnetic resonance imaging/spectroscopy) measurements, IBM and ALS functional rating scale questionnaire, quality of life questionnaires, 6 minute walk test, echocardiogram and electrocardiogram, electromyography/nerve conduction velocity, Motor Unit Number Estimation, cheek swab or saliva collection, pulse oximetry, skin fold calipers for fat layer thickness, arm and leg diameter determination, skin/muscle biopsy, pulmonary function studies, DEXA scan, bone scan, and x-rays.

Studying families with muscle and bone disease and/or dementia will help in understanding why the changes in the gene cause the muscle and bone problems. This study has the potential of helping develop new treatment options in the future.

The study team is also interested in monitoring disease progression through a natural history project. Non-invasive methods will be evaluated for the benefits of monitoring disease progression and results of future treatment.

In order to accomplish this, participants are requested to take part in procedures such as muscle strength measurements, rating scales for the muscle weakness, Magnetic Resonance Imaging (MRI), echocardiogram testing, lung function studies and studies to detect Paget disease of bone. Participants who will be requested to participate in the skin or/and muscle biopsy portion of the study will be asked to sign a separate consent form.

**Methods**

Comprehensive clinical studies were obtained in 109 (97 individuals with VCP disease, 12 presymptomatic gene carriers) individuals versus 36 unaffected first-degree relatives to establish useful biomarkers for VCP myopathy. We compared differences and progression in many functional parameters. Strength was tested using the Manual Muscle Test with Medical Research Council (MRC) scales. We obtained informed consent for all participants.

**Results**

Significant differences were found between the 3 groups for Inclusion Body Myositis Functional Rating Scale (IBMFRS), fatigue severity scale (FSS), ALSFRS (Amyotrophic Lateral Sclerosis Functional Rating Scale) questionnaires, the affected individuals had a significant decline in these measurements.

The mean MRC whole body total score for the affected individuals was 120.05 compared to the score in carriers (145.35), and unaffected individuals (130). Significant differences were found of the proximal muscles including shoulder abduction and hip flexion and distal muscle groups strength was retained.

| Table 1 | Affected | Carriers | Unaffected | P value |
|---|---|---|---|---|
| MRC whole body | 120.05 | 145.35 | NA | 0.01 |
| IBMFRS | 25.15 | 39.13 | 48.48 | <0.05 |
| FSS | 40.91 | 40.94 | 47.90 | <0.01 |
| 6MWT | 362.81 | 395.67 | 426.37 | <0.01 |
| ALFRS | 54.04 | 44.67 | 45.67 | 0.02 |

**Table 1. Average values among affected, carrier, and unaffected individuals for various rating scales**.

**Discussion**

We found correlations between IBMFRS and various tests of muscle strength. There were strong significant positive correlations between IBMFRS and MRC ($r=0.793$, $p<0.01$), between IBMFRS and 6MWT ($r=0.734$, $p<0.01$) and a significant, yet low, negative correlation ($r=-0.477$, $p=0.008$) between IBMFRS and FSS. Based on their scores from tests such as the FSS and 6MWT, MRC scale results, the presymptomatic carriers showed muscle weakness in their shoulders and hips indicating that they are beginning to manifest symptoms of the myopathy.

**Conclusion**

This comprehensive study provides a useful validation of these studies for monitoring of muscle weakness and pulmonary function progression in patients with VCP myopathy for clinical trials. We also saw differences in the presymptomatic carriers compared to controls.

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**Abstract 2024 – 18**

**Pulmonary Embolism and Stroke: A Case Report of a Large Biatrial Thrombus Saddling a PFO**

Rupam Sharma, MD; Kishan Ghadiya, MS IV; James Garcia, MS IV; Gagan Kooner, MD; Fowrooz Joolhar, MD

**Purpose**

In the intricate realm of cardiovascular pathology, a compelling case emerges: a large biatrial thrombus boldly straddling a patient foramen ovale. This daring interplay between anatomy and pathology sets a case for medical thriller, a twist of the ominous threat of both pulmonary embolism and stroke. Here is a case of a large biatrial thrombus saddling a patent foramen ovale.

**Summary of Results**

A 67-year-old male patient presented to the emergency department for severely progressive dyspnea and lower leg pain. Upon presentation patient was hypoxic to 85's, tachycardic to 112 and tachypneic to 23. Patient tested positive for COVID-19. CT pulmonary angiogram was immediately done which revealed large bilateral pulmonary emboli with evidence of right heart strain; tPA was given and the patient was taken for immediate mechanical thrombectomy and IVC filter placement.

At admission patient was alert and oriented to name, place, location, and situation without any significant deficits. 2nd hospital day the patient developed acute encephalopathy with right-sided weakness. Stroke protocol was initiated and subsequent MRI revealed acute infarctions of the left frontal and occipital lobes along with the left basal ganglia. TTE showed left atrial mass which was confirmed to be a large biatrial thrombus by TEE measuring 3cm x 1cm saddled on the interatrial shunt.

During the next few days of hospitalization, the patient continued to show mental status deterioration with worsening aphasia and confusion. On Day 7, the patient developed new facial palsy and worsening right lower extremity weakness concerning for acute CVA. Imaging was not concerning for new cerebral infarction at that time. However, on Day 14 of hospitalization, the patient again developed worsening aphasia, right side weakness, and fine motor movement. Repeat MRI confirmed new infarctions in the left frontal lobe and occipital lobe. It was determined the patient was likely developing recurrent CVAs from paradoxical emboli originating from his biatrial thrombus. Therefore, the patient was transferred to a tertiary care facility for surgical removal of the thrombus.

**Conclusions**

In conclusion, the intricate interplay between a biatrial thrombus and a patent foramen ovale highlights the critical importance of early diagnosis and tailored treatment, ultimately safeguarding patients from the devastating consequences of pulmonary embolism and stroke.

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**Abstract 2024 – 19**

**A Case Report: Disseminated Cutaneous Coccidioidomycosis Mimicking Hidradenitis Suppurativa**

Ramanjot Kaur, MD; Leopoldo Hartmann, MD; Michael Ozoemena, MD; Carol Avila, MD; Jacqueline Uy, MD

**Introduction**

Coccidioidomycosis, caused by dimorphic Coccidioides Immitis and Posadasii, rarely disseminates to skin but can present with challenging manifestation resembling various dermatological conditions. The disease is prevalent in arid regions and is acquired through inhalation of arthroconidia. This case report presents clinical features, diagnostic challenges, and management of disseminated cutaneous coccidioidomycosis (DCC) resembling hidradenitis suppurative (HS).

**Case Description**

A 31-year-old Hispanic male presented with worsening right inguinal and lower back (LB) pain secondary to abscess. He was in good health up until a year ago when he first developed right lateral thigh abscess, it self-drained and healed with scar. Six months later, he had another pustule draining lesion on right LB, s/p antibiotics, healed with scar. Three months ago, abscess formed at right inguinal and left LB which remained persistent despite multiple antibiotic regimens. Patient was seen in the ED 5-days prior to admission for new onset of symptoms: headache, subjective fever, nausea/vomiting, and left LB enlarging abscess, treated with I&D and antibiotics. His symptoms failed to resolve, and he returned to the hospital. Of note, patient reported severe cough 2-weeks prior to onset of first cutaneous lesion.

Patient was hemodynamically stable. Physical examination showed scar on right thigh (Image 1), open/draining wound of right inguinal site (Image 2), surgical wound of left LB (Image 3), indurated/closed site of right LB (Images 4). Lab workup was unremarkable except wound culture showed rare fungus resembling coccidiosis's species. Cocci serology reactive, CF titers 1:128. CXR showed right lower lobe cavitary lesion, confirmed with CT chest suggesting of pulmonary cocci. MRI lumbar showed involvement of vertebral bodies, sacrum, and iliac bones by coccidioidomycosis.

**Discussion**

Patient's cutaneous presentation mimicked those of HS, guiding his treatment regimen. Complications were due to failure to investigate broader differential diagnosis despite repeated treatment failure, resulting in DCC to the vertebral bodies. Cases with poor response to initial therapeutic treatment, extra vigilant is necessary to consider for rare form of diseases, requiring comprehensive workup including thorough culture studies, serological testing, and imaging. Consultation with specialist (e.g. Infectious Disease) is beneficial guiding further management. Patient was started on AmBisome IV 250mg (5mg/kg) every other day for duration of 3 months.

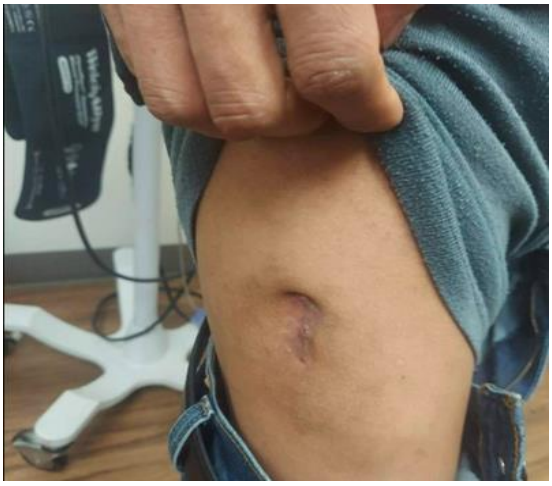

**Image 1: Self drained and healed with scar of right thigh**

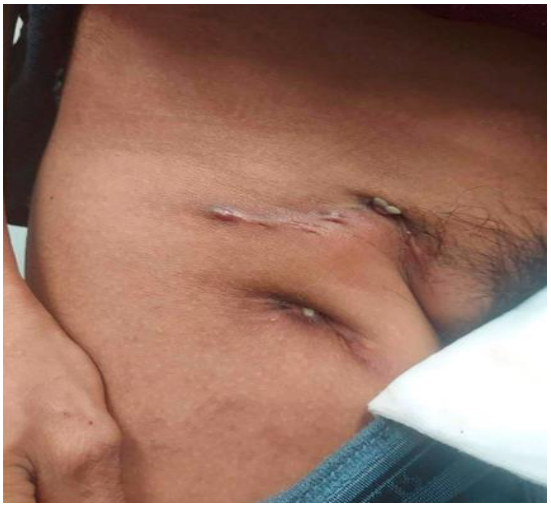

**Image 2: Multiple draining lesions of right inguinal site**

**Image 3: S/P I&4 with surgical wound of left lower back.**

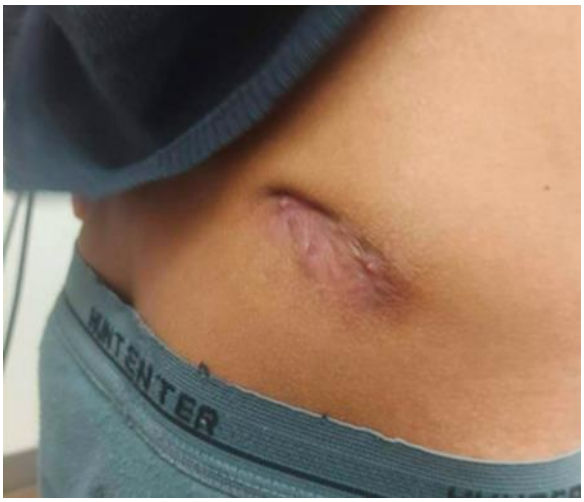

**Image 4: Indurated/closed site of right lower back**

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**Abstract 2024 – 20**
**A Rare Case of Biatrial Myxoma in a Young Male Presenting with Cerebrovascular Accident**
Joseph Soliman, MS III; Harnek Singh, MD; Tana Parker, MD

**Introduction**

Cardiac myxomas are the most common primary neoplasms found in the heart. Most cardiac myxomas arise in the left atrium, and the rest much less frequently from the mitral valve, right atrium, and occasionally from the ventricles. Biatrial cardiac myxomas are extremely rare, as the reported incidence is less than 2%. This case describes a 23-year-old previously healthy male who presented with unilateral weakness and was admitted for an ischemic stroke, secondary to biatrial myxomas that were incidentally found during the stroke evaluation. Given the rarity of biatrial myxomas, early cardiac evaluations for young adults presenting with cardiovascular and/or neurologic symptoms may be crucial to diagnosis, treatment, and potential prevention of subsequent systemic embolic events.

**Case Description**

A 23-year-old male with no significant medical history presented to the ED with new onset right-sided weakness for one hour prior to arrival. Stroke code was activated which included an echocardiogram and imaging. CT imaging showed Left MCA segment thrombus formation. MRI head/brain showed multifocal regions of acute ischemia within the Left MCA territory. The patient was admitted for an acute cerebrovascular accident (CVA) due to a large vessel occlusion in the left middle cerebral artery M1 segment based on the imaging findings. Neurology evaluated the patient, and felt he was a candidate for a left cerebral artery thrombectomy and tPA treatment. A transthoracic echocardiogram ordered as part of the stroke work up showed a mass in the left atrium concerning a myxoma. TEE was then done which showed a large mobile mass in the left atrium and a smaller mass in the right atrium.

The patient was admitted for an acute cerebrovascular accident. Due to the biatrial myxomas found incidentally on the echoes, Cardiothoracic surgery was consulted and evaluated for possible intervention. The patient was immediately transferred for resection of the atrial mass. His neurologic symptoms stabilized before he underwent bypass surgery for resection of the mass. A 4x6cm left atrial and a 1x2cm right atrial mass were excised and sent to pathology for confirmation. The patient had a swift recovery and was discharged home within the week.

**Discussion**

Though mostly benign in nature, myxomas are not without complications. There is evidence that suggests myxomas can lead to cardiovascular and neurologic complications such as occurred in this case. A single myxoma in the left atrium has the propensity to cause systemic embolization in 29% of patients. Consequently, the presence of multiple

myxomas may lead to a higher risk of developing an embolization event such as a stroke. Although myxomas occur most commonly in adults ages 30 to 60, the patient was a 23-year-old healthy male who experienced stroke like symptoms.

**Conclusion**

Myxomas are mostly sporadic and thought to arise from a combination of genetic and environmental factors with a small incidence of familial correlation. For adults, there are no current screening methods for myxomas. Consequently, myxomas, although rare, are an important differential to have for young adults presenting with neurologic and/or cardiovascular symptoms.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 21**
**Utilization of the I-Pass Supervised Sign Out to Reduce Lost Information and Adverse Events During Shift Change**

Valerie Espinoza, MD; Shatha Aboaid, MD; Mahum Zahid, MD; Amrit Dhillon, MD; Baldeep Mann, MD; Kasey Fox, DO

**Introduction**

Sign-out is the process of transferring care of patient among health care providers. It is a vital part of patient care. Inadequate sign outs can lead to issues of patient safety, delays in care, and patient harm. According to the ACGME survey conducted from February to April 2022, the Kern Medical Department of Medicine residents' National Compliance for Patient Safety and Teamwork was 74%, below the goal of 85%. On an internal resident survey, 52% of the Kern Medical Department of Medicine residents reported sometimes facing adverse events with the current sign out process.

**Purpose of Study**

The overall aim of this quality improvement project was to reduce the information lost during the sign-out process as measured by the Internal Medicine resident survey results. We hypothesized that a standardized sign-out process for residents would (1) reduce preventable errors during transitioning care of the patient between services (ICU to medicine floor), (2) improve residents' confidence to care for patients overnight, and (3) reduce preventable adverse events. Our goals were to (1) improve the Patient Safety and Teamwork section score from 74% to 85% within six months and (2) reduce adverse events reported by residents from 52% to 42%.

**The 5-Whys**

1. Our Patient Safety and Teamwork is below national average due to lack of a standardized sign out process.

2. There is a lack of standardized sign out due to lack of a standardized format to be used during shift change.

3. There is a lack of supervision from senior residents, chief residents, and attending physicians during sign out.

4. Prior sign out involved intern to intern sign out without supervision from senior residents and attendings.

5. ACGME survey results made attendings aware of the lack of standardized sign out process, leading to loss of information during shift change, and the need for a supervised standardized sign out format such as the I-PASS format.

**Methods**

The I-PASS mnemonic provided a framework for patient sign-out as follows: Illness severity, Patient summary, Action list, Situation awareness and contingency planning, Synthesis by receiver.
In a 2014 multicenter study, the I-PASS Handoff Bundle implementation was shown to reduce preventable adverse events. We implemented a standardized format for sign-out using the I-PASS model with appropriate supervision from senior residents, chief residents, and attending physicians. We educated the Internal Medicine residents and attendings on the use of the I-PASS model, which was used during all sign-out under supervision.

**Summary of Results**

Prior to the implementation of I-PASS, the Kern Medical Department of Medicine residents' Patient Safety and Teamwork compliance rate was 74%,

below the national average and our current goal of 85%. Following the implementation of I-PASS, our compliance rate on the Patient Safety and Teamwork section increased to 76%. The percentage of adverse events reported on our internal survey decreased from 52% to 42%. Following to the implementation of I-PASS, our internal survey revealed a result of 19% reported adverse event due to the current sign out process.

**Conclusion**

With the implementation of the I-PASS sign-out, we have seen significant improvement in the reported percentage of adverse events associated with the sign-out process. However, we recognize that we are still not completely at our goal of 85% for Patient Safety and Teamwork. Future interventions include continued education on I-PASS sign out and supervision of sign-out by senior residents, chief residents, and attending physicians. Our continued efforts aim to prevent issues of patient safety, delays in care, and patient harm that can be avoided with the standardized sign-out process.

**Discussion**

Standardized sign-out practices have proven to be beneficial nationally to help reduce adverse effects that directly impact patient safety and overall care. Implementation of standardized sign-out patients in all specialties may help reduce missed information when transferring care of patients between services, such as emergency medicine and internal medicine.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 22**
**Delayed Presentation of Partial Choroid Detachment with Vitreous Hemorrhage after Glaucoma Surgery**
Cecilia Jimenez, MD; Rachel O'Donnell, MD; Jagdipak Heer, MD

**Background**

Ocular complaints account for 3% of all emergency department visits. Delay or missed diagnosis can lead to permanent disability. Complications can arise a few days after the treatment of glaucoma as ocular pressures suddenly drop. Ophthalmologic equipment and on-call ophthalmology services can be limited at some hospitals. Ultrasound, a common tool to the emergency medicine provider, can be of great use in evaluation of ophthalmologic complaints. A common complication after the treatment of glaucoma such as vitreous hemorrhage can be detected with use of ultrasound.

**Case Presentation**

A 66-year-old female with a past medical history of chronic kidney disease, hepatic cirrhosis, left eye blindness, and alcohol dependence presented to the emergency department with a chief complaint of painless diminished vision for the past 1 day. No recent trauma or falls. She had unspecified glaucoma surgery approximately one month prior. She had been compliant with her ophthalmic drops timolol and brimonidine.

Physical exam noted Intraocular pressure (IOP): Right: 8 Left: 5. No light detected on the left. Visual Acuity Right: 20/50. No fluorescein dye uptake. Slit lamp negative for cell and flare, foreign body, or corneal defect. Ocular ultrasound significant for vitreous hemorrhage and partial choroidal detachment. She was instructed to stop using timolol and brimonidine. Atropine ophthalmic drops were started. Urgent referral to ophthalmology was placed for next day evaluation.

**Discussion**

Ultrasound is readily available in many hospitals and clinics. New advances have now placed ultrasound capabilities in our phones. Deeper structures in the eye can be directly visualized, enhancing the ability of the emergency medicine provider to accurately diagnose ophthalmic emergencies. Imaging can also be shared with consulting providers improving outpatient follow-up.

**Conclusion**

Vitreous hemorrhage and choroidal detachment are known complications of glaucoma surgery. These complications can be seen 0-6 weeks post procedure with most complications occurring sooner as a result of sudden pressure drop. Emergency medicine providers can assist in diagnosing these complications with ultrasonography which is an effective and noninvasive tool. Prompt diagnosis is

key as any delay can lead to permanent disability in our patients.

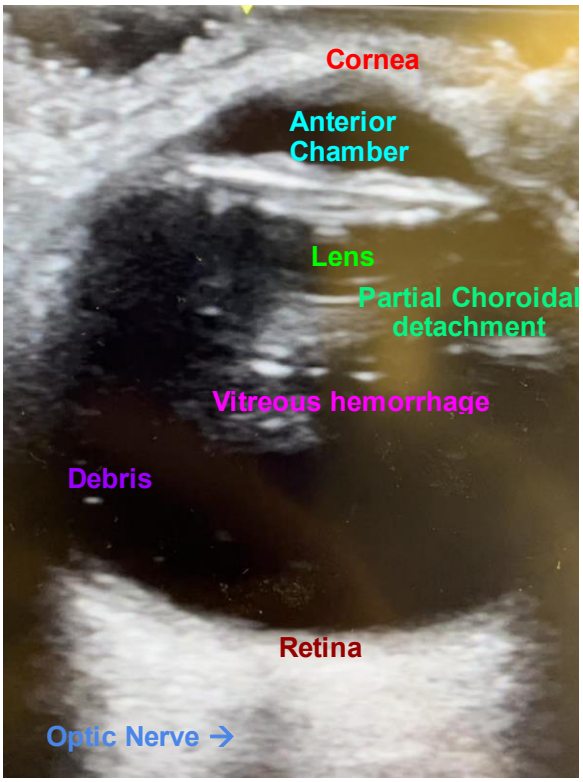


**Figure 1. Vitreous hemorrhage with partial choroid detachment**

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**Abstract 2024 – 23**
**Increasing Patient Satisfaction with Bedside Rounds**
Valerie Espinoza, MD; Colby Kulyn, MD; Saakshi Dulani, OMS IV; Baldeep Mann, MD; Kasey Fox, DO

**Introduction**

In efforts to improve patient satisfaction, bedside rounds have been implemented in attempts to include patient in decision making with providers. Current studies have shown variable results on patients' overall satisfaction often noting no difference in patient-relevant outcomes, noting future studies must be conducted on a wide scale.

**Purpose of Study**

From November 2021 to November 2022, the Kern Medical hospitalists' average patient satisfaction regarding communication by doctors was 69%, compared to the national average of 80%. This data was obtained from patient satisfaction survey for all medicine inpatients. Kern Medical's internal survey from November 2021 to November 2022 revealed that 63% of inpatient internal medicine physicians, including residents and attendings, performed bedside rounding 0-20% of the time and 29% of physicians performed bedside rounding 20-40% of the time.

The goals of this project was to (1) increase patient satisfaction rates from 69% to 79% from November 2022 to November 2023 as measured specifically by the survey question "4593-During this hospital stay, how often did doctors explain things in a way you could understand?" and (2) increase the practice of bedside rounds as measured specifically by our internal survey asking the percentage of bedside rounds performed with a goal to decrease the amount of physicians who performed bedside rounds only 0-20% of the time from 63% to 53%.

**The 5-Whys**

1. Doctor patient communication satisfaction scores are lower than national averages because physicians aren't spending as much time at the bedside to allow the patient to listen to the plan being formed and given time to ask questions.

2. Physicians don't spend as much time at the bedside because they do hallway/table rounds instead of bedside rounds.

3. Physicians don't do beside rounds because they have concerns about the time it would take to do bedside rounds or aren't comfortable rounding at the patient's bedside.

4. Physicians may not have experience or are not familiar with bedside rounds.

5. There currently aren't any physician educational activities regarding bedside rounds or to address physicians concerns with rounding at the bedside.

**Methods**

In effort to train hospitalists and trainees, lectures and faculty development sessions were conducted to address physicians' concerns about bedside rounds and educate physicians of benefits of bedside rounds. We conducted an internal survey every 6 months to measure how often bedside rounds are

performed. We also extracted data from surveys of discharged patient regarding provider communication, including listening and clear explanation.

**Summary of Results**

The specific questions regarding patient satisfaction were modified from the November 2021 -2022 survey and November 2022-2023 survey. In the November 2021-2022 survey, the specific question regarding provider communication was "During this hospital stay, how often did doctors explain things in a way you could understand?" The November 2022-2023 survey focused on a broader patient interpretation of communication listed as "provider listening" and "clear explanation provided by provider". These two questions were averaged and compared to the November 2021-2022 question. In November 2021-2022, providers received an average patient satisfaction score of 65% compared to November 2022-2023 of 74%.

Between November 2022 and November 2023, the internal survey showed the percentage of physicians who reported performing bedside rounds 0-20% of the time decreased from 24% to 4%. In the same timeframe, the percentage of physicians who reported performing bedside rounds 80-100% of the time increased from 2.6% to 42.3%.

**Conclusion**

With the implementation of bedside rounds, we have seen significant improvement in patient satisfaction. Future interventions include continued improvement of bedside rounds to facilitate learning and patient involvement. Our continued efforts aim to efficiently educate patients in a cohesive team setting.

**Discussion**

We hope that with implementation of bedside rounds patients will be actively engaged in the medical decision making of medical students, residents and attendings in a way that encourages patient participation and understanding and improves patients' overall satisfaction.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

**Abstract 2024 – 24**

**Rare Chronic Posterior Shoulder Dislocation in an Avid Boxer**

Simon Lalehzarian, MS III; Gagan Kooner, MD; Harnek Singh, MD

**Introduction**

Posterior shoulder dislocations account for less than 5% of all shoulder dislocations. Patients with posterior dislocation of the shoulder may have additional injuries that complicate their assessment and treatment. Among them, the reverse Hill-Sachs lesion, also called the McLaughlin lesion, is present in up to 50% of cases. The reverse Hill-Sachs lesion is the fracture of the anteromedial portion of the humeral head as a result of its posterior dislocation on the glena. A posterior shoulder dislocation associated with reverse Hill-Sachs lesion is a rare injury, often missed or misdiagnosed, and CT and MRI scans are needed to detect the associated bone and soft tissue lesions. Treatment should be individualized taking into account the patient's features as well as bone and soft tissue lesions in both sides of the shoulder joint, humeral head, and glenoid.

**Case Description**

This case features a 40-year-old male boxer with no significant past medical history who presented with right shoulder pain. Patient was hitting a punching bag, missed the punching bag, and felt a "pull" on his right shoulder. Patient endorsed 5/10 pain and paresthesias with decreased range of motion and strength. Patient had minimal swelling and severely limited overhead activities due to pain.

On physical examination, the patient was neurovascularly intact. There was a palpable visual defect to the anterior aspect of the patient's right shoulder as well as tenderness over the long head of the biceps at the rotator interval. Differential diagnoses included anterior shoulder dislocation, posterior shoulder dislocation, clavicular fracture, bicipital tendonitis, and rotator cuff injury. Imaging showed posterior subluxation with a reverse Hill-Sachs lesion, 22mm partial-thickness articular surface posterior labrum tear, and two 3-4mm calcific bodies representing avulsion fragments.

Patient was diagnosed with a chronic posterior dislocation of the right shoulder joint with a large

reverse Hill-Sachs deformity. Surgical reduction was achieved through an open reduction with osteochondral allograft transfer system (OATS) procedure to the humeral head.

**Discussion**

At seven weeks postoperatively, patient continued to endorse slight pain and paresthesias in the right shoulder. He stated his shoulder felt better and that he has an increased range of motion compared to preoperative status. On active range of motion testing, patient had forward flexion 100°, abduction 90°, and external rotation 5°. Postoperative imaging showed significant posterior subluxation of the humeral head in relation to the glenoid, with the osteochondral allograft in appropriate position. There was some additional collapse of the graft due to the humeral head position which may lead to decreased range of motion in the future. Overall, the patient is progressing well and was able to begin formal physical therapy starting in phase 1 of the shoulder rehabilitation protocol.

**Conclusion**

A posterior shoulder dislocation associated with a reverse Hill-Sachs lesion is a rare injury and management is often complicated. Additionally, reverse Hill-Sachs deformities are associated with an increased incidence of recurrence and prolonged recovery. Proper referral to an orthopedist or specialist in shoulder injury should be ensured to avoid the long-term complications that can be associated with posterior shoulder dislocations.

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**Abstract 2024 – 25**
**Pyomyositis Caused by Coccidioides in a 15-Year-Old Male**

Tanner Mooney, OMS III; BreeAnna Carlson, OMS III; Judy Kim, OMS III; Nathan Lytton, OMS III; Thiagarajan Nandhagopal, MD

**Introduction**

Pyomyositis is an infection involving the skeletal muscle, most often leading to abscess formation. Bacteria is the most common cause with Staphylococcus aureus causing roughly 90% of cases with pyomyositis. We present a 15-year-old male with one of the first ever reported cases of pyomyositis caused by Coccidioidomycosis. Myositis and osteomyelitis with fungal causes are very uncommon in immunocompromised patients and exceedingly rare in immunocompetent patients. Furthermore, there are very few cases of reported Coccidioides immitis myositis; and, to the best of our knowledge, no reported cases of Cocci myositis outside of the gluteal muscle group. This case will describe an adolescent male with concurrent bacterial and fungal myositis and osteomyelitis infections and his treatment course.

**Case Description**

A 15-year-old African American male with no past medical history presented to the emergency department with pain and swelling of the left leg. Patient reports a tearing sensation in his left upper thigh muscle 5 months ago. Since then, he has been complaining of intermittent pain. Purulent material was drained in the ED and CT scan reported large left pelvic, hip, and proximal thigh pyomyositis. He was brought to the OR for irrigation and debridement and admitted to the hospital. Wound cultures drawn in the ED and OR during irrigation and debridement were significant for both Enterococcus faecalis and Coccidioides. Further questioning revealed that the patient may have had a respiratory infection around 6 months prior to admission. Additional imaging revealed an acute Coccidioides immitis fungal myositis and Enterococcus faecalis pyomyositis in the left rectus femoris as well as Coccidioides immitis fungal osteomyelitis in the left ilium, femur, and tibia. He was started on Amoxicillin 1 g every 8 hours for 21 days and Amphotericin B IV infusions daily for 10 days, then 3 days a week for a total of 3 months. The patient's pyrexia and pain resolved immediately following debridement. Due to bone involvement, the patient will receive a total of 3 months of triweekly amphotericin B infusions followed by oral azole maintenance therapy for at least 3 years.

**Discussion & Conclusion**

Although bacteria are the most common etiology for pyomyositis, other less common causes should be investigated. Coccidioides is typically asymptomatic, but symptomatic typically causes respiratory involvement. Disseminated cocci occurs around 1% of the time. No other case reports were found of a similar presentation of Coccidioides immitis causing a deep abscess outside of the gluteal region.

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**Abstract 2024 – 26**
**Pulmonary Actinomycosis: A Case of Mistaken Identity**
Danish Khalid, MD; Lovedip Kooner, MD; Steven Beebe, MD; Yaritza Santos, MD; Zara'a Alshami; Ralph Garcia-Pacheco, MD

**Introduction**

Actinomyces are gram-positive filamentous non-acid fast anaerobic bacteria that normally colonize the human oral cavity, GI tract, and female urogenital tracts. Infection by this organism only occurs when host defenses are inhibited. Actinomyces spreads contiguously without any respect to tissue planes resulting in draining sinus tracts with tiny yellow clumps called sulfur granules, a pathological hallmark. Pulmonary involvement is a rare manifestation of actinomyces infections. It can be primarily due to aspiration of oral and GI secretions. It poses a challenge as it is often misdiagnosed as tuberculosis or lung cancer, and must be suspected in middle-aged males in low socioeconomic areas.

**Case Description**

We present a 58-year-old previously-healthy non-smoker male who presented to Kern Medical ED with a one-month history of shortness of breath, cough associated with streaks of blood mixed with sputum, and chest pain. On examination, the patient was unremarkable. Laboratory values were significant for a white blood cells count of 13,600 UI with a differential showing an absolute neutrophil 9.6, and absolute eosinophil 1.2.

Plain chest radiograph and computed tomography revealed a 4.3 cm right hilar mass in the anterior right upper lobe with lymphadenopathy. Coccidioidomycosis titers were sent and resulted nonreactive. Tuberculosis QuantiFERON Gold resulted negative. SAR-COV 2 RNA came back negative as well. With high suspicion of bronchogenic cancer given its presentation, a fiberoptic bronchoscopy showed variation of the right upper lobe with apical segment fusion of the right upper lobe. Biopsy was performed and showed acute inflammation with no evidence of malignancy. Microscopic examination of the specimens obtained showed no evidence of acid-fast or fungal organisms. CT-guided needle biopsy did not show malignancy but revealed some filamentous organisms resembling actinomyces. Treatment was initiated with IV penicillin for 1 month followed by oral amoxicillin for about 6 months.

**Discussion**

Pulmonary actinomyces is a bacterial lung infection. Although a rare disease in the developed world, the presentation of pulmonary actinomyces has changed in nature with shortness of breath, cough with hemoptysis, and chest pain as the primary symptoms. Basic laboratory tests reflect the nonspecific nature of this chronic disease. Imaging modalities are not diagnostic however can assist with distinguishing the disease from lung carcinoma. In this case, imaging did not provide much differentiation as it presented as a mass with hilar lymphadenopathy. Thus, bronchoscopy was offered as another approach for identification. This can be helpful for mass lesions that are centrally located however peripherally located masses can pose a challenge as all equipment have limitations. That is why a CT-guided needle aspiration was performed to get a better picture of the disease process. It was only then was it revealed that the mass was indeed actinomyces.

**Conclusion**

In conclusion, pulmonary actinomyces is a rare manifestation of the organism that radiologists and respiratory physicians should be aware of when investigating patients. An early diagnosis will prevent the significant physical and psychological morbidity, including any unwarranted surgery associated with delayed diagnosis.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 27**
**A Comparison Between the Two Long-Acting Buprenorphine Injectables: A Pharmacokinetic Case Study**
Calynn Dioses, PharmD; Sarah Gonzalez, MD

**Introduction**

Opioid use disorder is a complex and chronic disease. Choosing a personalized treatment plan is key to ensure the patient does not relapse and stays in remission. Partial opioid agonists like buprenorphine

are first line-therapies.1 When comparing the two available long acting buprenorphine injectables there are some pharmacokinetic differences. This is because Brixadi uses a liquid crystalline gel and Sublocade uses a DL-lactide-co-glycolide polymer that creates a solid depot. Brixadi (buprenorphine extended release) is available in weekly or monthly dosing. Sublocade (buprenorphine extended release) is available in monthly dosing only.2,3 In adults, weekly Brixadi dosing half-life is 3 to 5 days, monthly Brixadi half-life is 19 to 26 days, and Sublocade half-life is 43 to 60 days. Time to peak for weekly Brixadi is around 24 hours, monthly is 6 to 10 hours, and Sublocade is 24 hours.

**Case Presentation**

A 33-year-old male with a history of depression, anxiety, opioid use disorder, and chronic prescription benzodiazepine use presented to the Medication Assistance and Recovery Clinic (MARC) to establish care for opioid use disorder. He smokes 3 grams of Fentanyl daily to every 2 days over the last 4 years. The patient struggled to maintain sobriety while on oral sublingual buprenorphine due taste intolerance leading to vomiting. The patient also failed methadone therapy due to lack of compliance with treatment.

The patient subsequently underwent a modified Bernese method micro induction over 2 weeks with Suboxone and illicit Fentanyl with a goal to be transitioned to Sublocade 300 mg injection. Two weeks after the Sublocade injection the patient complained withdrawal symptoms. He was prescribed supplemental Suboxone 4/1 mg daily as needed. It was then determined that the patient was having GI viral symptoms instead of withdrawal. Supplemental Suboxone was discontinued and patient was then transitioned to Brixadi 128 mg monthly 2 weeks later because the patient had a small amount of abdominal wall subcutaneous tissue.

At the 4-week follow up, the patient had relapsed on Fentanyl because of breakthrough craving while on Brixadi injections. The patient needed a total supplementation of 8/2 mg of Suboxone daily. Therefore, the patient will transition from Brixadi to Sublocade injections with a goal of using minimal supplemental Suboxone due to patient's aversion to all sublingual buprenorphine products.

**Discussion**

Prescribing patterns in MARC have favored Brixadi over Sublocade. This case study shows that more research needs to be done in determining place of therapy for Sublocade. There is not a study that compares Sublocade and Brixadi head to head to compare efficacy and pharmacokinetic differences. This also highlights the potency of illicit Fentanyl use which may require higher doses of opioid partial agonist injectables like Sublocade.

**Conclusion**

Despite the customizable nature of Brixadi dosing, Sublocade may be a more appropriate option in those with breakthrough cravings while on Brixadi injections. The main goal for clinicians should be to get patients to the highest efficacious dose to prevent breakthrough cravings. Supplemental sublingual buprenorphine may be needed in patients with breakthrough cravings while on a long acting injectable.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 28**
**May-Thurner Like Syndrome**
Shikha Mishra, MD; Nihad Al-Yousfi, MD; Jesslin Abraham, MD; Henry Donsanouphit, MS IV; Arian Ashrafi, MS IV; Oluwatoni Afolabi, MS IV

**Introduction**

May-Thurner Syndrome (MTS) is a condition in which venous flow is obstructed due to extrinsic arterial or anatomical pressure in the iliocaval veins. It commonly presents in women in their 3rd or 4th decade of life. This case report presents an unusual case of a 50 years-old male patient with left external iliac vein thrombosis secondary to compression of the left common iliac vein due to a saccular aneurysm on the left common iliac artery. This differs from the typical presentation of MTS, which is caused by compression of the left common iliac vein between the right common iliac artery and lumbar vertebrae.

**Case Description**

In this case report, we present the evaluation and subsequent management of a patient with May-Thurner like syndrome. A 50-year-old male with past medical history of left leg deep vein thrombosis (DVT) presented to clinic with left lower extremity (LLE) pain and swelling of 2 days. Patient was sent to the ED. He reported a history of DVT in October 2022 and a cardiopulmonary embolic event in February 2023, which led to hospitalization. He was on apixaban 5mg from January until the end of February. Lower extremity venous doppler ultrasound showed complete LLE DVT. He was started on Heparin and underwent chest X-ray, CT angiogram of LLE, CT chest/abdomen/pelvis. CT scans showed extensive bilateral pulmonary emboli and intraluminal thrombus in the left external iliac vein extending downward to the common femoral vein and the proximal superficial femoral vein. The subsequent thrombectomy and angioplasty by interventional radiology (IR) reported revascularization of left femoral-popliteal, external, and common iliac veins with catheter directed mechanical thrombectomy.

Additionally, moderate pulmonary arterial hypertension secondary to acute chronic pulmonary thromboembolism was treated by right pulmonary artery catheter directed mechanical thrombectomy. IR also reported persistent extraluminal compression of the left common iliac vein, secondary to adjacent common iliac artery aneurysm, a MTS variant. The patient underwent left common iliac artery covered stent graft deployment with angioplasty assistance for treatment of left common iliac artery aneurysm with contained dissection. As the patient became stable he was discharged on Apixaban. During follow-up visit with Vascular Surgery patient complained of LLE swelling and decreased range of motion, which was moderately relived by compression stockings and elevation of the leg. Repeat ultrasound 6 weeks post-discharge showed non-occlusive DVT throughout the left lower extremity, common femoral through calf veins.

**Discussion**

MTS can lead to multiple thromboembolic events in various organs. It may be hard to diagnose due to the rarity of it. It is important to note that there are different variants of the syndrome which may not be considered as a differential diagnosis upon initial impressions. The mild presentation of this syndrome can be managed with conservative treatments such as compression stockings. However, moderate to severe presentations may need anticoagulation therapies even in the absence of thromboembolic events.

**Conclusion**

The goal of this paper is to help with earlier diagnosis of MTS and its variants which could improve the long-term effects and prognosis of the disease.

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**Abstract 2024 – 29**
**Revolutionizing Diagnosis: A Case Report on Gestational Trophoblastic Disease Diagnosed Through Point-Of-Care Transvaginal Ultrasound**
Ejodakeme Okojie, MD; Verna Marquez, MD

**Introduction**

Gestational trophoblastic disease is a group of disorders related to pregnancy. They originate from the placenta trophoblast and can have serious complications including but not limited to malignancy. Revolutionizing the diagnosis using a point of care transvaginal ultrasound is pivotal for early diagnosis and better outcomes. This case describes the use of Transvaginal Point of Care Ultrasound (POCUS) in the clinic setting for early diagnosis of gestational trophoblastic disease.

**Case Presentation**

We describe a 23-year-old primigravida (G1P0), 7 weeks pregnant who presented to the clinic with complaints of vaginal spotting. Vital signs and physical examination were unremarkable. A quantitative serum beta human chorionic gonadotropin ßhCG test was elevated at 97,377 mIU/mL and transvaginal point-of-care ultrasound (POCUS) was highly suggestive of a molar pregnancy. A formal transabdominal and transvaginal ultrasound was done, and it revealed an abnormal thickening of the endometrial lining with a cystic pattern most consistent with a molar pregnancy.

The patient was promptly referred to a gynecologist for further evaluation and management and was diagnosed with a hydatidiform mole. A suction

dilatation and curettage (D&C) was performed, however post-D&C, patient continued to have persistently increased ßhCG and was diagnosed with a Molar Gestational Trophoblastic Neoplasm. The patient was then initiated on Methotrexate, and ßhCG was monitored until it became negative.

**Discussion**

This case illustrates the utilization of point -of -care transvaginal ultrasound done at the clinic facilitating the timely diagnosis of gestational trophoblastic disease and prompt referral for specialist evaluation. Early detection of Gestational trophoblastic disease is crucial, especially in cases with malignant potential. Diagnosis and early treatment can be delayed when patients have to traditionally wait for scheduled appointments in order to get an ultrasound done. Studies have reported better patient outcomes with early diagnosis and appropriate treatment.

**Conclusion**

Integrating point -of -care transvaginal ultrasound into clinical practice is pivotal in the early diagnosis, prompt referral for a formal ultrasound, expedited referral to a specialist, timely initiation of treatment and better treatment outcomes in patients with gestational trophoblastic diseases.

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**Abstract 2024 – 30**
**A Rare Case of Proteus Brain Abscess Secondary to Ventriculoperitoneal Shunt Placed due to Coccidioidal Meningitis Causing Hydrocephalus**
Kevin Dao, MD; Saakshi Dulani, OMS IV; Aishwarya Saripalli, MD; Shikha Mishra MD; Kasey Fox D.O

**Introduction**

Proteus mirabilis is a common gram-negative anaerobe seen in urinary tract infections. However, in some cases, this bacterium has been shown to cause other complicated infections. Here we would like to present a rare case of proteus mirabilis that has invaded the brain in a patient with a ventriculoperitoneal shunt placed due to Coccidioidal meningitis causing hydrocephalus. We would also like to discuss the importance of monitoring the ventriculoperitoneal shunts as well as management.

**Case Presentation**

A 63-year-old male with a history of coccidiomycosis presents to the ED after being brought in by emergency medical services with complaints of confusion. He was noted to be oriented to self and unable to follow commands. A full AMS workup was ordered, including a CMP, urinalysis/urine culture, thyroid function panel, urine toxicology, HbA1c, blood glucose, ESR, CRP, HIV, hepatitis panel, and syphilis titers, which were unremarkable. CT scan of the head without contrast was ordered, as was a lumbar puncture with CSF cultures. Imaging demonstrated enlargement of the ventricles with periventricular edema, likely secondary to increased CSF. A ventriculoperitoneal shunt was placed by neurosurgery and the patient started coccidiomycosis treatment. A repeat CT scan showed a decrease in ventricular prominence, and the patient was discharged to a facility, but returned due to worsening mentation.

Another head CT without contrast showed worsening right frontal hypodensity with a questionable collection surrounding the catheter. Lumbar puncture was done, and CSF was sent for culture and gram stain. The VP shunt was removed, and an external ventricular drainage (EVD) was placed. Cultures grew Proteus mirabilis, and ceftriaxone 2 g was started. An MRI showed an abscess surrounding the shunt path, and metronidazole 1500 mg daily was started. Shortly after, another CT scan of the head without contrast was done, which showed moderately severe hydrocephalus with gas in the lateral ventricles. Despite treatment, patient mentation didn't improve, and he was sent to hospice.

**Discussion**

To prevent shunt infections, sterile surgical techniques along with perioperative antibiotic prophylaxis is the gold standard. Prior studies show that systemic antibiotics given prophylactically for ventricular shunts decrease rates of CSF shunt infections. However, complications can still occur and thus, close monitoring should be done for the patient. In our patient, considerations should be held due to his co morbidities. Perioperative prophylaxis with broader spectrum antibiotics such as third or fourth generation cephalosporins should have been considered due to their activity against Enterobacterales and ability to penetrate the CNS as well as cover gram negatives.

**Conclusion**

Overall, it should also be noted that although gram positive organisms are the most common cause of shunt related infections, this does not mean that other organisms be neglected. This is especially true in patients that have a history of various co morbidities especially fungal infection and as such broader spectrum antibiotics should be strongly considered. Hopefully such changes in management provide better care to patients and help prevent shunt infections and complications in the future.

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**Abstract 2024 – 31**

**A Unique Case of a Mildly Symptomatic Patient with Severe Hypokalemia Secondary to Furosemide**

Kevin Dao, MD; Amrit Dhillon, MD; Syed Saad Uddin, MD; Hobart Lai, DO

**Introduction**

Hypokalemia is a common condition that has been well study. In most patients, mild hypokalemia is asymptomatic while those with moderate to severe hypokalemia tend to show more prominent symptoms. In patients with a potassium level of 2.5 mEq/L or lower, symptoms such as muscle cramps/weakness, rhabdomyolysis, and myoglobinuria, tend to arise.

These symptoms can lead to more debilitating consequences such as renal failure secondary to the rhabdomyolysis or respiratory failure secondary to muscle weakness. Other symptoms such as ileus, nausea, vomiting, as well cardiac arrhythmia and abnormalities are also associated. Here we would like to present a patient with a potassium of 1.4 mEq/L secondary to furosemide, who presents to the ED with only complaints of muscle spasms for the past few days.

**Case Presentation**

Patient is a 62-year-old male with history of hypothyroidism and hypertension who presents with bilateral upper and lower extremity weakness and muscle spasms for 2 days. On chart review, patient was admitted to another hospital and was noted to have a potassium of 2.1 and a magnesium of 1.7 which was repleted accordingly. Patient states that he currently takes furosemide 20 mg oral daily for hypertension and levothyroxine 25 mcg for hypothyroidism and is compliant.
Blood work showed the patient to have a potassium level of 1.4 mmol/L and a magnesium level of 1.6 mg/dL. Phosphorus level was also noted to be low at 1.3 mg/dL but all other electrolytes were unremarkable. Thyroid function test was unremarkable. Patient CK was also noted to be elevated at 2537 unit/L. Aldosterone as well as plasma renin activity were also noted to be unremarkable. Urinalysis showed an elevated urine albumin/creatinine ratio 170 mcg/mg cr, but otherwise unremarkable. EKG showed no significant abnormalities.

Patient was then started on potassium and magnesium repletion as well placed on telemetry, with BMP every 4 hours. Patient eventually received 850 mEq of potassium and 3 g of magnesium sulfate until patient's electrolytes normalized. Patient then stated that his symptoms improved and was eventually discharged with education on medication effects.

**Discussion**

Due to furosemide being a very common medication physicians may tend to overlook the side effects. However, this patient was noted to have hypokalemia secondary to furosemide prior, based on chart reviews. Thus, patient education regarding side effects should have been made. What was also interesting is that this patient had no significant symptoms despite such severe hypokalemia. In our case the patient was constantly monitored for arrhythmias. His potassium was also repleted at a constant potassium repletion of 40 mEq of potassium every four hours with repeat BMP requiring up to 850 mEq. This was particularly due to the patient having diffuse potassium depletion resulting in increased cellular uptake.

**Conclusion**

Overall patient should be educated regarding side effects of medications they take especially patients with good compliance. Patient should be encouraged to follow-up with primary care physicians to ensure no similar situations occur.

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**Abstract 2024 – 32**
**A Case of Coccidiomycosis Elbow Bursitis with no Pulmonary or Systemic Signs**
Kevin Dao, MD; Saakshi Dulani, OMS IV; Najib Ussef, MD; Royce Johnson, MD

**Introduction**

Coccidiomycosis is a dimorphic fungus that has a variety of pathologies however, is more associated with pulmonary infections. Although numerous cases have been reported regarding Coccidiomycosis ability to affect other organ systems through disseminated spread starting from the lung. These forms of disseminated Coccidiomycosis would then manifest in to symptoms such as meningitis, erythema nodosum, etc., however, very rarely would there be a case of Coccidiomycosis only isolated to a system that doesn't include the lungs. Here we present a patient that arrives to the clinic due to a soft tissue mass of the elbow that was aspirated and cultured, which grew Coccidiomycosis. All other findings were unremarkable. To date this is one of the very few cases of Coccidiomycosis manifestations that have occurred in a patient with no other signs or symptoms

**Case Presentation**

Patient is a 22-year-old woman with no significant co morbidities notes that she had mass over the elbow for the last couple years that has been increasing in size. She noted that it was mildly tender to palpation but states the area doesn't bother her unless she is physically active. She also notes occasional numbness and tingling in the right upper extremity. Patient denies any prior history of elbow surgery.

Aspiration of the mass and culture was done as well as blood work. Cultures grew positive for Coccidiomycosis, and blood work showed positive titers with 1:8 with IgG being reactive and IgM being weakly reactive. Chest X-ray was ordered due to concerns of pulmonary Coccidiomycosis that resulted in dissemination however, was unremarkable. Patient was then started on Fluconazole 200 mg four times daily.

She responded well to medical treatment and surgery was deferred. At follow up appointment patient states that she no longer has a mass on her elbow.

**Discussion**

Due to the location of the central valley, Coccidiomycosis infections tend to be common, and as such, various unique pathologies tend to occur. In this instance, the patient had no significant co-morbidities that would suggest the diagnosis of Coccidiomycosis bursitis. Regardless, treatment should be no different than standard Coccidiomycosis treatment with fluconazole. What is especially interesting is that 60 percent of all individuals who are infected with Coccidiomycosis tend to be either mildly symptomatic or asymptomatic. [1] Due to the patient not having any cuts, lacerations, or other cause that could cause fungal spores to germinate the area, the only possible explanation is that the patient had inhaled Coccidiomycosis spores, which grew into a mass on the patient's right elbow.

**Conclusion**

Overall, this is a unique presentation of Coccidiomycosis infection. This interesting case shows that Coccidiomycosis pathologies can still be varied and there is still much to learn.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 33**
**A Rare Case of Bilateral Mirror Movements in a Patient with Unilateral Closed Lip Schizencephaly**
Kevin Dao, MD; Shaan Braich, RA; Clins Chacko, RA; Hari Kuni Prasad Veedu, MD

**Introduction**

Schizencephaly is a very unique disease due to an abnormal migration of fluid-filled clefts that communicate between the lateral ventricles and cerebrum. Mirror movements are a form of involuntary movements seen where intentional movements of one side result in unintentional movements of the opposite side. Separately, schizencephaly occurs in approximately 1 in every 100,000 births, whereas mirror movements occur in 1 in every 1,000,000 births.

Here we would like to present a case of a 23-year-old male with focal epilepsy due to a malformation of

cortical development resulting in right-sided closed-lip schizencephaly and polymicrogyria. The patient was noted to have normal cognitive functioning; however, he was noted to be performing involuntary movements of homologous muscles while voluntarily moving the contralateral muscles. To date, this is one of the very few cases of mirror movements secondary to schizencephaly.

**Case Presentation**

The patient is a 23-year-old male with a history of chronic focal epilepsy due to malformations in the right hemisphere, unilateral closed lip schizencephaly, and polymicrogyria that were confirmed via MRI and presented to the neurology clinic to establish care. The patient states that he also has a history of left hemi atrophy and hemiparesis, with dystonia involving the fingers and mild elbow flexion. His seizure semiology progresses from dyspnea to vocalization and eventually bilateral tonic seizures with preserved consciousness of 20–30 seconds; however, he states that his seizures are well controlled with lamotrigine 150 mg twice daily. He also states that when he performs intentional movements with either his right or left upper or lower extremities, the contralateral extremity makes similar involuntary movements. He notes that these movements remain static over time and are not impairing his ability to function or perform activities of daily living. The patient is noted to have no cognitive impairment and stated that his last 72-hour EEG was unremarkable. He also states that he is able to drive without any issues.

**Discussion**

Schizencephaly causing mirror movements is quite a rare combination of pathologies, with only a few cases ever reported in literature. Various classifications have been made to further categorize this disease on a spectrum of severity. As a result, most patients tend to develop varying forms of neurological manifestations of differing degrees; however, it is quite unique for a patient to develop a mild form of schizencephaly and develop mirror movements as well as seizures. Although the seizures can be managed medically, managing the mirror movements is much more difficult. Regardless, this case shows that there is still much to learn regarding the unique pathologies that can occur in the brain.

**Conclusion**

Overall, there is still much to understand regarding both schizencephaly and mirror movements individually, and hopefully, over time, advances in medicine will allow physicians to not only solve each condition separately but together if they were to occur.

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**Abstract 2024 – 34**
**A Rare Case of Spontaneous Bacterial Peritonitis in a Patient with Cardiogenic Ascites Introduction**
Jose Garcia-Corella, MD; Kevin Dao, MD; Mahum Zahid, MD; Leila Moosavi, MD

**Introduction**

Ascites is a fairly common complication of portal hypertension, particularly seen in liver cirrhosis. Complications from ascites like spontaneous bacterial peritonitis (SBP), an infection of ascitic fluid, may arise. This disease can have devastating effects including increased mortality if not addressed accordingly, and reaccumulating of fluid is bound to occur which may result in recurrent SBP. Since liver disease tends to be more commonplace, SBP secondary to cirrhosis is well documented. However, SBP secondary to heart failure is less so. Here we would like to present a rare case of cardiogenic spontaneous bacterial peritonitis and discuss management and outcome of our patient.

**Case Description**

A 49-year-old male with hypertension and alcohol use disorder presents with 7 days of progressive abdominal pain and distention, fever, dyspnea and peripheral edema. On admission, he had abdominal distension, positive fluid wave, and diffuse tenderness on palpation, with bilateral lower extremity pitting edema extending up to his knees.

Diagnostic paracentesis was performed, and fluid analysis revealed albumin 1.3 g/dL, serum albumin-ascites gradient (SAAG) 1.7, 276 polymorphonuclears (PMN) and fluid protein 2.7 g/dL. Fluid was also sent for gram stain and culture. The rest of laboratories were notable for mild transaminitis, elevated brain natriuretic peptide (BNP), mild direct hyperbilirubinemia (1.2 mg/dL) and lymphopenia,

but normal alkaline phosphatase, platelet count and coagulation times.

The patient was empirically started on ceftriaxone 2 grams daily. Abdominal ultrasound showed increased hepatic echotexture suggesting hepatocellular disease. Transthoracic echocardiogram showed an ejection fraction of 5% with severe biventricular dysfunction. Blood and ascitic fluid cultures were negative. Appropriate therapy for heart failure with reduced ejection fraction was started and the patient completed 7 days of antibiotics, showing significant improvement of symptoms without recurrence of ascites.

**Discussion**

The patient presented had risk factors for both hepatic and cardiac disease, with hyperbilirubinemia, lymphopenia and ultrasound findings suggesting chronic liver damage, but BNP and echocardiogram suggested an acute exacerbation of heart failure. Analyzing ascitic fluid helps determine its etiology. A SAAG ≥1.1 g/dL predicts portal hypertension. Protein concentration is also useful; <2.5 g/dL correlates with a liver-related ascites, whereas ≥2.5 g/dL, as seen on our patient, suggests a cardiac origin of ascites. Diagnosis of SBP is made when ascites fluid has a PMN count of ≥250/mm.

Paracentesis is crucial in confirming or ruling out SBP, and delaying it is associated with increased risk of mortality. Patients with SBP-associated septic shock were noted to have a mortality rate of 82 % whereas those with SBP along with renal dysfunction had a mortality rate of up to 67%. There are some case reports of cardiac-related infectious peritonitis with one study reporting spontaneous fungal peritonitis secondary to a cardiac cause.

**Conclusion**

Although this is an uncommon case, when presented with a patient with risk factors for multiple organ damage, one must always consider alternate causes for their symptoms. Regardless of its etiology, prompt initiation of empiric antibiotics remains mainstay in the treatment of SBP, however, treatment of its cause decreases the chance of recurrence.

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**Abstract 2024 – 35**

**Diminishing C. Diff: A Quality Improvement Project on Decreasing Hospital-Acquired Clostridium Difficile Infections**

Sanjana Murdande, MD; Danish Khalid, MD; Glenn Goldis, MD, MMM; Rasha Kuran, MD; Kristi Brownfield, RN, MSN, CIC; Amanda Eskew; Akriti Kaur, MD

**Background**

Clostridium Difficile (C. Difficile) is a major cause of hospital-acquired diarrhea in the United States. It is particularly associated with antibiotic use and accounts for around 15-20% of all antibiotic-associated diarrhea cases. In 2020, the overall healthcare cost associated with C. Difficile infection was 6.3 billion US dollars (Liu et al., 2023). Efforts to decrease the incidence of these infections are aimed at identifying and decreasing the risk factors of acquiring C. Difficile infection.

Risk factors can be broadly categorized into patient characteristics, materials management, healthcare worker techniques, and delays in diagnosis. However, one of the most significant risk factors for hospital-acquired C. Difficile infection remains as antibiotic use, with increased number of antibiotics and length of use amplifying the risk of infection.

The use of probiotics, such as Bio-K+, a lactobacillus-based formulation, has been shown to be effective in primary prevention of C. Difficile in individuals at high risk of infection. Multiple randomized controlled trials comparing Bio-K+ versus placebo demonstrated that Bio-K+ has a protective effect over acquiring C. Difficile (Evans & Johnson, 2015).

**Aims Statement**

In KMC patients of an “inpatient” or “observation” status, and for whom certain antibiotics are ordered (with high-risk of C. Diff infection), we will use a Risk Assessment alert to risk stratify them for hospital-acquired C. Diff infection.

A score of greater than or equal to 7 is associated with high-risk and will prompt an order of the probiotic Bio-K+. The alert will fire for providers of the ‘Physician’, ‘Resident’, and ‘Nurse Practitioner’ role. The goal is to reach a Standardized Infection Ratio (SIR) less than 0.405 with the implementation of this alert.

**Methods**

We implemented a Risk Assessment alert for patients 18 years of age and older with a patient status order of "inpatient" or "observation". This alert was built to fire when a provider attempted to order a particular antibiotic (associated with high risk of C. Diff infection). The alert has an attached 'C. Diff Screening Powerform' that has 12 risk factors for acquiring C. Difficile infection, each with an associated score value. The provider will select the risk factors that apply to the patient. If the total score adds up to greater than or equal to 7, the patient is at high-risk for developing hospital-acquired C. Difficile infection. There is then a "yes" or "no" question to the provider if they would like to order probiotics, specifically Bio-K+.

**Results**

We implemented the probiotic Bio-K+ in August of 2023, due to evidence that supported its efficacy in decreasing antibiotic-associated diarrhea and the incidence of C. Diff infection. The option to order Bio-K+ was provided for those patients who met risk factor criteria resulting in a score of greater than or equal to 7. The third quarter of 2023 demonstrated a C. Diff SIR of 0.353 and the final quarter a C. Diff SIR of 0.131.

**Conclusions and Implications**

Probiotics, such as Bio-K+, function to reduce the growth of C. Diff infection through the restoration of normal gastrointestinal flora that antibiotics disrupt. The initial Risk Assessment alert fired for those patients who were of "inpatient" or "observation" status and had a high-risk antibiotic ordered. A score greater than or equal to 7 prompted the provider to choose between ordering or foregoing the Bio-K+ order. Given its efficacy in reducing the C. Diff SIR, Bio-K+ administration should be considered for all patients on high-risk antibiotics, regardless of their risk factor score.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 36**

**A Rare Case of Bacillus Bacteremia Secondary to Shigella Flexneri Colitis Introduction**

Kevin Dao, MD; Amrit Dhillon, MD; Syed Saad Uddin, MD; Jose Garcia-Corella, MD; Elias Inga Jaco, MD; Hobart Lai, DO

**Background**

Shigella Flexneri is a facultatively anaerobic gram-negative bacterium that is a member of the Enterobacteriaceae. This bacterium is quite prevalent in lower-socioeconomic countries all throughout the world, causing mild symptoms such as diarrhea to more severe symptoms like hemorrhagic colitis. Due to its ability to induce a variety of mild to severe pathologies, other opportunist organisms are willing to take advantage of this. Here, we would like to present a case of S. flexneri colitis resulting in bacillus bacteremia and eventually septic shock. As such, a discussion regarding the pathogenesis and treatment of this patient will be discussed.

**Case Presentation**

The patient is a 53-year-old female who presented to the emergency department (ED) for complaints of diffuse abdominal pain for the past 4 days. The patient reported symptoms of abdominal cramping with approximately 3–4 episodes of non-bloody, watery diarrhea and non-bloody emesis. She also notes that her symptoms started when she had old canned chicken soup along with some rice for dinner. The patient stated that she also had some subjective fevers but no other symptoms. Of note, she also denies any sick contacts or recent travel.

In the ED, the patient was noted to be tachycardic, with a heart rate in the 120's to 130's. Her blood pressure was in the 60's systolic and diastolic in the 40's, with a mean arterial pressure in the 50's. The patient's rectal temperature was also 39.5 °C. Lab work depicted a lactic acid level of 5.1 mmol/L and a WBC of 18.6 x 10^9/L. Blood cultures were taken, and the patient was given 4L of IV fluids and started on vancomycin and piperacillin/tazobactam with ICU admission. The patient was started on vasopressors and, fortunately, stabilized, but still had complaints of abdominal pain. Stool cultures were taken, and CT abdomen and pelvis showed diffuse mural wall thickening of the colon, suggestive of colitis. The

patient was weaned off vasopressors and was downgraded to internal medicine.

Stool cultures and speciation were positive for S. Flexneri, and blood cultures grew positive for Bacillus species. Piperacillin/Tazobactam was discontinued, and the patient was started on ceftriaxone for shigella and continued on vancomycin for bacillus. After repeat cultures were negative and the patient remained stable, she was eventually discharged with trimethoprim-sulfamethoxazole for 10 days.

**Discussion**

Based on the patient's history, blood work, cultures and imagining it was concluded that the patient developed S. flexneri colitis resulting in bacillus bacteremia and eventually sepsis. This is quite interesting since shigella dysenteriae tends to be more associated with colitis and toxic megacolon. However, other cases have reported that S. flexneri is capable of causing these symptoms as well. Regardless broad-spectrum antibiotics should be started initially with management of septic shock. More specific antibiotics should then be started based on cultures.

**Conclusion**

This case demonstrates how S. flexneri colitis can cause other opportunistic bacterial infections resulting in septic shock. Hopefully this case will provide more awareness regarding S. flexneri pathogenesis and what this bacterium is capable of.

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**Abstract 2024 – 37**

**Failure Of Anticoagulation in a Patient with Remote Roux-En-Y Gastric Bypass Resulting in Stroke - A Case Report**

Janpreet Bhandohal, MD; Harnek Singh, MD; Lovedip Kooner, MD; Anna Bjarvin, OMS III; Brandon Nguyen, OMS III

**Introduction**

Direct oral anticoagulants (DOACs) are popular medications used for anticoagulation in conditions such as atrial fibrillation and are considered to be first line therapy. These drugs have an improved side effect profile and decreased need for monitoring in comparison to warfarin. However, anticoagulation failure in patients with a history of malabsorption secondary to bariatric surgery have been described in the literature. Roux-en-Y gastric bypass (RYGB) leads to weight loss via restriction and malabsorption, these changes in absorption may interfere with the absorption of certain drugs such as anticoagulants. Decreased absorption of rivaroxaban and dabigatran resulting in insufficient anticoagulation has been previously documented, this adverse outcome has been less well described with apixaban.

**Case Presentation**

The patient is a 65-year-old male with extensive past medical history including atrial fibrillation, recent cerebellar infarction, recurrent TIA and remote RYGB surgery who presented to the emergency department following an episode of dizziness, weakness, headache and nausea/vomiting. His blood pressure at the time of presentation was 208/112, so the patient was admitted for management of hypertensive urgency. CT angiogram revealed a left atrial appendage filling defect concerning for thrombus. Further chart review revealed an MRI documenting a left cerebellar infarction one month prior after the patient presented to the ER with lower extremity weakness and dizziness. The patient was discharged on 5 mg apixaban BID at that time, and he remained compliant with his anticoagulation regimen. His history of RYGB 30 years prior and failed anticoagulation in the context of his symptoms prompted reevaluation of the patient's anticoagulation regimen. The decision was ultimately made to bridge the patient to warfarin and monitor him outpatient at the coumadin clinic. The patient was instructed to continue both enoxaparin and warfarin upon discharge. He was closely followed outpatient in coumadin clinic and reached therapeutic INR on warfarin.

**Discussion**

Here we present a patient with extensive co-morbidities as well as a remote history of Roux-en-Y gastric bypass who failed anticoagulation with apixaban after presenting with a TIA and left atrial thrombus. Apixaban is generally considered to be a safe choice in patients with a history of gastric bypass, however perhaps warfarin would be more appropriate, as these patients may benefit from the increased surveillance that comes with warfarin therapy. Obesity is linked to a multitude of comorbid

diseases, and patients with a history of bariatric surgery often have complicated medical histories. With the high prevalence of obesity in the United States and the increasing popularity of gastric bypass surgery, adequate research on the topic of anticoagulation in this vulnerable patient population should remain a high priority for clinicians.

**Conclusion**

Patients with a history of malabsorption due to bariatric surgery could be at risk of ineffective anticoagulation while on DOAC therapy. Warfarin necessitates close follow-up via INR monitoring and allows clinicians to ensure their patients stay within the therapeutic range, therefore it may be a more appropriate choice in patients with a high risk of thromboembolic events and a history of GI malabsorption.

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**Abstract 2024 – 38**
**Cerebellar Infarction in a Patient with Moyamoya**
Janpreet Bhandohal, MD; Harnek Singh, MD; Lovedip Kooner, MD; Anna Bjarvin, OMS III

**Introduction**

Moyamoya disease is a rare disorder caused by progressive stenosis of the carotid arteries. It has a bimodal distribution, affecting school aged children and adults in their 30s. Moyamoya occurs more frequently in females than males (2:1) and in East Asian countries. It classically presents with recurrent cerebrovascular accidents which are ischemic (more common in children) or hemorrhagic (more common in adults).

Moyamoya syndrome is caused by unilateral (MMS) internal carotid artery occlusion while Moyamoya disease is caused by bilateral occlusion (MMD). They are both diagnosed radiographically by the "puff of smoke" sign on neuroimaging; angiography reveals extensive abnormal vascularization which forms around the occlusion. The pathophysiology of MMS and MMD is incompletely understood, genetic causes are implicated more often in Asian patients with MMD while multifactorial causes such as infection and autoimmunity have been attributed to Moyamoya syndrome.

**Case Presentation**

A 37-year-old Hispanic male with history of hypertension presented with headache and stroke-like symptoms to the ER. The patient had five minutes of vertigo followed by intermittent spells of dizziness and constant left sided gait unsteadiness. He presented to the ER the following day after waking up with an 8/10 constant headache and worsening unsteadiness. Non-contrast CT brain/head revealed a left sided cerebellar infarct, CT angiogram of the brain/head with contrast further revealed multifocal occlusion of the left vertebral artery and left PICA, and occlusion of the right M1 segment of the MCA with collateral vessels consistent with underlying Moyamoya syndrome.

Medical management included aspirin, clopidogrel and atorvastatin. Physical examination showed left-sided hyperreflexia. The patient continued to complain of gait unsteadiness with leftward leaning. Neurology recommended referral to a neurosurgery center outpatient for possible bypass. Repeat CT on the third day of hospitalization showed evolving left cerebellar acute non-hemorrhagic infarction with mass effect on the brainstem and 4th ventricle, IV mannitol was given to decrease cerebral edema. Subsequent non-contrast CT showed persistence of edema and mass effect; the patient was transferred to the DOU to monitor for the development of obstructive hydrocephalus necessitating urgent neurosurgical intervention. The patient's imaging improved, and he was downgraded to the medical floor and discharged to outpatient follow-up on day seven of his hospitalization.

**Discussion**

While anterior and posterior cerebral circulation strokes have been reported in association with both MMS and MMD, neither have been associated with cerebellar infarctions. In both children and adults, the ICA and MCA are involved in 84-89% of cases. Here we report a 37-year-old Hispanic male with radiographically diagnosed Moyamoya syndrome presenting with a left-sided cerebellar infarction, a highly unusual manifestation of the disorder.

**Conclusion**

Surgical intervention stands as the primary treatment modality for Moyamoya disease, as medical therapies have shown limited efficacy in

halting disease progression. Surgical options predominantly encompass direct and indirect cerebrovascular bypass techniques, however even with intervention the disease causes significant disability. Further studies are warranted to elucidate the underlying mechanisms of Moyamoya disease and syndrome, ultimately guiding therapeutic approaches and improving patient outcomes.

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**Abstract 2024 – 39**
**Urethral Leiomyoma**
Christie Tran, DO; Shelby Hamilton, MS III; Yufan Brandon Chen, MD

**Introduction**

Leiomyomas, or fibroids, are solid tumors originating from the smooth muscle cells of mesenchymal tissue in the uterus and the most common neoplasms within the female pelvis. While typically found within the uterus, leiomyomas have been found in other regions of the pelvis. Few cases of leiomyomas in the urethra have been reported.

**Case Description**

A 47-year-old female presented with recurrent urinary tract infections (UTIs) and symptoms of suprapubic pressure, urinary frequency, dysuria, and gross hematuria. Her gynecological history was significant for supracervical hysterectomy, unilateral salpingo-oophorectomy, and two bladder repair procedures involving mesh. Her obstetric history was significant for two vaginal deliveries and two cesarean deliveries.

On physical exam and cystoscopy, an approximately 1 cm polypoid mass was protruding from the urethra without visible stalk.

Pelvic MRI was significant for a 1.3 x 1.4 cm mixed cystic area at the lower anterior aspect of the urethra. No definite communication to the urethra was noted.

The patient underwent resection of the urethral mass with reconstruction of the urethra. Intraoperative findings noted that the mass protruded from the urethra adherent anteriorly laterally on left side of urethra at approximately 11 to 3 o'clock position and involved the entire mid proximal urethra.

The mass was excised entirely with intact proximal urethra bladder neck, and the urethral defect was closed in two layers with absorbable suture. Patient tolerated procedure well and was discharged with Foley catheter in place for two weeks. At six weeks she had complete resolution of her symptoms, and the urethra had completely healed. The surgical pathology reported leiomyoma.

**Discussion**

Urethral leiomyomas may be asymptomatic or present with symptoms secondary to urethral obstruction including dysuria, weak urine flow, post-voiding drip, or, as our patient's case, recurrent UTIs and hematuria. It may also present as dyspareunia. Surgical excision is the mainstay of treatment, in order to sample tissue and rule out a malignancy. Just as uterine leiomyomas rarely undergo malignant transformation, there have not been any reports of urethral leiomyomas developing into a malignant tumor. It is, however, still important to ensure that malignancy is formally ruled out when a patient presents with a urethral mass. Cystoscopy is indicated when a patient presents with recurrent UTIs, chronic dysuria, or gross hematuria.

**Conclusion**

Urethral leiomyoma should be considered on the differential for women presenting with a urethral mass.

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**Abstract 2024 – 40**
**Anti-Coagulant Therapy in a Post-Hysterectomy Patient with Heparin-Induced Thrombocytopenia and a BMI >70**
Christie Tran, DO; Megan Haugland, MD; Amin A. Ramzan, MD

**Introduction**

Gynecologic oncology patients are at high-risk for venous thromboembolism (VTE). Unfractionated heparin is commonly used for inpatient pharmacological thromboprophylaxis but poses a risk of heparin-induced thrombocytopenia (HIT), an immune-mediated response that can result in

thrombotic events. The incidence of HIT with unfractionated heparin for VTE prophylaxis is 0.1% and higher post-operatively. HIT is typically treated with argatroban, a direct thrombin inhibitor, with weight-based dosing. Here we discuss a patient with class V obesity who developed HIT after surgery for gynecologic cancer and argatroban management.

**Case Description**

A 39-year-old female with class V obesity (Weight 205.7 kg, BMI 71.8) underwent laparoscopic bilateral sentinel pelvic lymph node biopsy, total abdominal hysterectomy and bilateral salpingo-oophorectomy for endometrial intraepithelial neoplasia. Final pathology resulted as stage IA1 endometrial adenocarcinoma. Patient's postoperative course was complicated by wound infection, rhabdomyolysis, and HIT.

Per routine pharmacological VTE prophylaxis, she received perioperative unfractionated heparin (5,000 units subcutaneous) and continued the same dose post-operatively every eight hours with intermittent pneumatic compression devices. On post-operative day 9, she developed thrombocytopenia with platelet count of 76,000/mcL that continued to downtrend. Unfractionated heparin was discontinued given high suspicion for HIT. The diagnosis was ultimately confirmed with positive heparin-induced platelet antibodies.

Argatroban IV infusion at 2 mcg/kg/min was initiated. Though the patient was approximately 206 kg, hematology and anticoagulation pharmacy recommended dosing by 140 kg weight due to lack of established guidelines for treatment above this weight. Goal PTT of 50-60 seconds was used for titration. During the treatment course the patient had no clinical signs of thrombosis, and ultrasound venous duplex of all extremities showed no evidence of deep vein thrombosis. Patient additionally received IV dexamethasone 40 mg for four days and IVIG 30 mg for five days.

During the treatment course, the platelets continued to downtrend with nadir of 21,000/mcL before demonstrating response to treatment. By post-operative day 16, the platelet count reached 180,000/mcL. Argatroban was discontinued and the patient was transitioned to Apixaban 5 mg BID. Platelets continued to uptrend and were 245,000/mcL upon discharge on post-operative day 19. She continued Apixaban 5 mg BID for 30 days with close outpatient follow-up.

**Discussion**

Development of HIT is an uncommon hematologic emergency. We reviewed HIT cases amongst gynecology oncologic patients. Though some patients did have obesity, none had BMI >50. Our patient's BMI of 71.8 made treatment particularly challenging given the need for sufficient anticoagulation while balancing the bleeding risk in a post-operative setting. A multi-disciplinary collaborative approach amongst the gynecologic oncology, hematology and clinical pharmacy services was critical in safely managing this patient.

**Conclusion**

Argatroban dosing for 140 kg can be considered for patients with weights up to 206 kg with good response as demonstrated in our case.

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**Abstract 2024 – 41**
**Incidental Diagnosis of STEMI on CT in Burn Patient in the ED**
Maria Jose Araujo, MD; Rachel O'Donnell, MD

**Introduction**

ST-elevation myocardial infarctions (STEMIs) are a life-threatening condition where there is insufficient blood flow to a region of the heart, leading to death of cardiac cells. It is the most common cause of morbidity and mortality worldwide (1). Prompt coronary angiography with percutaneous coronary intervention (PCI) is the mainstay of treatment. The diagnosis must be made quickly, which is traditionally done based on the patient's history, electrocardiogram (EKG), and cardiac enzymes. We present a case of a STEMI that was diagnosed on computer tomography (CT) imaging before changes were present on EKG.

**Case Description**

A 62-year-old male with no past medical history was brought in by ambulance after being found down. The patient had initially reported he consumed a large amount of alcohol and fell asleep on the ground. On arrival, his vitals were stable. He

appeared clinically intoxicated and his physical exam was significant for superficial and deep partial burns over 20-25% of his body, including his back.

Treatment was supportive care until arrangements were made for transfer to a burn center. At the time, the patient's only complaint was pain to the back at the site of his burns. Given the ambiguity of the history, an EKG was performed at 1841 which was within normal limits.

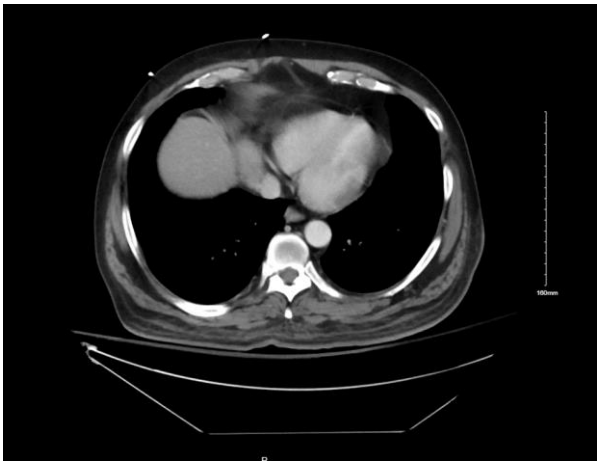
As the patient sobered, he reported that he may have sustained trauma by falling out of a truck, therefore he underwent CT with contrast chest, abdomen, and pelvis at 2108. The radiologist called with a critical finding of a heterogeneous low-attenuation area in the posterior wall of the left ventricle of the heart that could represent ischemia vs motion artifact. When the patient returned from CT, the nurse noticed telemetry changes prompting a repeat EKG at 2136 which demonstrated a new inferior STEMI. When questioned, the patient now endorsed chest pain. He was immediately transferred to a STEMI center for PCI.

**Discussion**

In the few case reports in the literature of STEMIs incidentally found on imaging, patients had either a concerning history for possible cardiac pathology or had multiple comorbidities that increased their risk of a STEMI. They also received CT chest or CT angiography chest to evaluate for cardiopulmonary pathology (1). These are timed differently than CTs performed for trauma, which are not timed appropriately to view perfusion abnormalities of the myocardium. Our patient did not endorse risk factors for a STEMI, nor was his initial presentation consistent with cardiac pathology. There are also known artifacts that may mimic the low perfusion appearance of an MI. However, if there is decreased perfusion of the subendocardial layer of the myocardium in the distribution of a coronary artery on CT, then it is more likely to represent infarct rather than artifact (2).

**Conclusion**

STEMIs may be seen on CT of the chest. Our patient's diagnosis may have been delayed had we not received the critical finding from the radiologist. The time-sensitive nature of STEMIs makes it difficult to do further research, as delaying PCI to obtain a CT is unacceptable.



***For a list of references cited in this abstract, along with additional EKG images, please contact researchforum@kernmedical.com.***

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**Abstract 2024 – 42**
**Mucormycosis Rhinosinusitis with Parameningeal Involvement**

Sagar Mehta, MS IV; Elaine Deemer, DO; Jason Kahlon, MD; Shikha Mishra, MD; Katayoun Sabetian, MD; Matthew Clarke, MD; Harmanjeet Dhillon, MD; London Knight, DO; Sydney Cross, OMS III; Madeline Tena, OMS III

**Introduction**

Rhinocerebral mucormycosis is a devastating infection that exceeds an 80% fatality rate with brain involvement. Early detection with surgical and antifungal treatment results in a reduction of mortality to 30%. Patients typically present with acute sinusitis, congestion with purulent discharge, and headache. Meningeal involvement rarely occurs due to the blood-brain barrier. In severe rhinosinusitis, mucor meningitis can occur via direct extension from paranasal sinus, blood vessels, or nerves. In this case, we describe the rare initial presentation of mucormycosis with parameningeal symptoms.

**Case Description**

The patient is a 48-year-old Hispanic male with uncontrolled diabetes mellitus type 2, who

presented with 4 days of confusion. Patient reported severe headache, light sensitivity, and could not answer additional questions. Patient's friend stated, patient developed headaches, neck pain, and left lip numbness 15 days prior. At bedside, printed outside hospital documents showed an ED summary with diagnosis of nasopharyngeal carcinoma and diabetes mellitus type 2 and CT report showing mass-like fullness of left lateral and posterior walls of nasopharynx, concerning for neoplasm.

In the emergency department, patient was hypertensive and tachycardic. On physical exam, the patient was alert, well appearing, middle aged lean man in moderate distress, purulent discharge around eyes with crust formation and conjunctival injection bilaterally, nuchal rigidity, and oriented to name and month. Labs showed blood glucose 472 mg/dL, lactic acid 2.2 mmol/L, and WBC 23,700/mcL. Lumbar puncture demonstrated WBC 74/mcL with lymphocytic predominance, glucose 184 mg/dL and protein 90 mg/dL. CT of head/neck without contrast showed chronic paranasal sinus disease.

Within 12 hours of presentation, patient developed left vision loss with nonreactive pinpoint pupil, ptosis, ophthalmoplegia, decreased left cranial nerve V1-V2 sensation, and normal right eye. Otolaryngologist emergently performed nasopharyngeal mass biopsy and debridement. Intraoperatively, extensive necrotic tissues in maxillary and ethmoid sinuses extending to the orbital apex and pterygopalatine fossa were found and pathology confirmed fungus. Patient started on liposomal amphotericin 10 mg/kg daily, and added isavuconazonium 372 mg daily. Karius analysis positive for Rhizopus arrhizus one week later, and fungal culture confirmed Rhizopus arrhizus one month later.

Patient has been on antifungal therapy with strict insulin-dependent diabetic control for the past 3 months and is relatively stable without any new complications.

**Discussion**

Typically, symptoms of rhinocerebral mucormycosis range from nasal congestion or discharge, progressing to facial numbness, blurry or double vision, ocular pain, and fever. Medical treatment alone is ineffective due to poor tissue penetration of antifungals and mucorales are largely resistant to most antifungal agents. Due to the high morbidity and mortality rate of 85%, a multifaceted approach with surgical and medical intervention allows for source control and systemic treatment, which are fundamental to improving survivability.

This patient presented unusually, first with parameningeal symptoms including pervasive headache, meningismus, and severe encephalopathy, leading to misdiagnosis and delayed treatment initially. Despite the rapid progression, prompt diagnosis and treatment from experienced physicians has kept him alive, with minimal morbidity. Further studies on species specific antifungal therapies and alternative methods for clearing fungal burden will be needed to improve the morbidity.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 43**
**Hereditary Angioedema: An Acute Exacerbation Triggered by Sun Exposure**
Shikha Mishra, MD; Nihad A. Al-Yousfi, MD; Jesslin Abraham, MD; Oluwatoni Afolabi, MS IV; Arian Ashrafi, MS IV; Henry Donsanouphit, MS IV

**Introduction**

Hereditary angioedema is a rare autosomal dominant disease. It occurs due to a deficiency in C1 esterase inhibitor which leads to excess production of bradykinin, resulting in recurrent attacks of angioedema. The genetic condition manifests as severe swelling in various parts of the body and may be potentially life-threatening in cases of laryngeal edema. HAE attacks may be triggered by various factors such as emotional stress, infection, environmental factors, physical exertion, and trauma. Herein, we report the case of an acute attack of hereditary angioedema triggered by sun exposure and the subsequent management.

**Case Presentation**

A 34-year-old female with a history of hereditary angioedema presented to the emergency room complaining of diffuse facial swelling and right lower extremity swelling that started 1 day ago. The patient believed this attack was triggered by sun exposure while she was riding her bike the day prior.

She stated that emotional stress has been a trigger in the past for facial swelling attacks. The patient had been unable to obtain her monthly maintenance medications, Firazyr and Takhzyro, for the last 2 months due to homelessness and social issues. The patient was diagnosed with HAE when she was 10 years of age and has a family history of HAE with her sibling being affected. Prior acute attacks have required 6 intubations and a tracheostomy. The patient was given 0.3 mg of epinephrine intramuscularly by emergency medical services on route to the emergency department. In the emergency department, her vital signs were stable, and bloodwork was unremarkable. She denied symptoms of respiratory distress or airway compromise. The physical exam was remarkable for diffuse orbital and perioral edema, in addition to right lateral foot swelling. She was given another dose of epinephrine in the emergency department. C1 esterase inhibitors were not available in pharmacy formulary at the time of patient presentation. She was admitted to medicine and given 2 units of fresh frozen plasma, 10 mg of Decadron, and famotidine with noted improvement of symptoms. While awaiting monitoring for improvement, the patient eloped from the emergency department. The patient was scheduled for an outpatient visit the following week to establish care.

**Discussion**

The management of hereditary angioedema primarily consists of the medical management of acute episodes and long-term prophylaxis therapy. In acute attacks, priority is given to securing the airway if signs and symptoms of airway compromise are present. The first line therapies for acute treatment include C1 inhibitor, kallikrein inhibitor, or bradykinin B2-receptor antagonist; in addition to fresh frozen plasma, if first-line therapies are unavailable as utilized in this case.

**Conclusion**

This case highlights that, in addition to medical management, the identification of factors that trigger acute episodes in an individual can significantly improve long-term disease management, allowing for prompt treatment and prevention of acute attacks.

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**Abstract 2024 – 44**

**Repeated Remote Preconditioning and Muscular Strength and Endurance in Young Adults**

Jesse Okoli; Money Ghimire, BS; Jahyun Kim, PhD

**Purpose**

Remote ischemic preconditioning is 3 or 4 cycles of brief blood flow blockage followed by blood flow restoration. Previous studies showed this intervention reduced ischemic reperfusion injury and improved cardiovascular functions. Since RIPC stimulates growth factors, it may improve skeletal muscle strength and endurance. However, studies have yet to conclude whether RIPC training could be effective in facilitating muscular strength and endurance improvements. Previous studies applied RIPC less than 1 week and this may not be sufficient to elicit muscular strength and endurance improvements. Thus, this study investigated whether a longer period of RIPC (4 weeks) improves muscular strength and endurance.

**Methods**

11 healthy young adults without cardiovascular disease risk factors were recruited from the local community (n=11; 3 M, 8 F, Age 21.00 ± 1.34 yr.; BMI 23.85 ± 3.21 kg/m2). RIPC training was applied for 4 weeks in the sequence of 6 days of training with a 1-day break (total 24 days) using 4 cycles of 5 minutes of occlusion with 200 mmHg of pressure followed by 5 minutes of reperfusion. Lower limb strength and endurance were assessed by isometric and isokinetic knee extension movements using Biodex System 4. Paired t-tests were used to analyze the data (baseline vs. 4 weeks).

**Results**

The outcome showed 4 weeks of repeated RIPC improved isometric peak torque (166.6 ± 78.2 vs. 173.6 ± 76.3 Nm, p=0.05) and isokinetic peak torque (99.0 ± 28.6 vs. 109.2 ± 38.2 Nm, p=0.05). Moreover, total work (2330.3 ± 668.7 vs. 2602.7 ± 824.2, p=0.064) and fatigue difference between 2 sets (16.3 ± 11 ± 6.7 ± 15.6, p=0.07) tended to improve after 4 weeks of RIPC.

**Conclusion**

The current preliminary data showed that 4 weeks of RIPC improved muscular strength with limited

endurance improvements. These results suggest that long-term repeated RIPC could be an alternative intervention to improve muscular strength and endurance for someone who has limitations with engaging in strength training. Further research is needed to elucidate physiological mechanisms to explain these outcomes.

This research was supported by the Research, Scholarship, and Creative Activity Support Grant (RSCA), California State University Bakersfield.

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**Abstract 2024 – 45**
**Chronic Creatine Supplementation Improves Strength and Arterial Stiffness: A Case Study**
Money Ghimire, BS; Jahyun Kim, PhD

**Purpose**

Aging is an inevitable condition that causes progressive and generalized loss of body functions. As a result, skeletal muscle mass is decreased which increases the fall risks in older adults. Arterial stiffness is the rigidness of arteries and a predictor of cardiovascular diseases (CVDs). It is also increased by the aging process. Creatine (Cr) supplement is widely accepted as an effective way to improve muscular strength in young athletic populations. Vascular health improvement has also been seen in young adults after Cr supplementation. However, creatine without exercise in older adults has inconsistent findings, and no previous studies have investigated the effects of chronic Cr supplementation on systemic arterial stiffness in older adults. Thus, the purpose of this study is to understand the effects of 4 weeks of Cr supplementation on skeletal muscle strength, cardiovascular functions, and fall risks in older adults.

**Methods**

Healthy older adults (≥60 years old) with blood pressure (BP) ≤139 mmHg/ ≤89 mmHg were recruited. For arterial stiffness measures, both pulse wave augmentation (PWA) and pulse wave velocity (PWV) were calculated using Sphygmocor XCEL (AtCor Medical, New South Wales, AUS), and manual blood pressure cuffs were used to measure the blood pressure. Handgrip strength was measured for the upper body strength. the lower body strength was measured by the Biodex dynamometer. All measurements were repeated after 30 days of Cr supplementation.

**Results**

One participant completed the study (Age 78, BMI 21.3, Gender: F) and data are presented as pre- vs post-changes in mean arterial pressure, PWV, Alx 75 (augmentation index), TUG test, handgrip strength, and isometric peak torque (IPKTQ). The results showed no improvements in PWV, MAP, TUG test, and handgrip strength test but improvements were seen in Alx75 and IPKTQ. Alx 75 (Pre 28% vs post 23 %) and IPKTQ (Pre 112.9 Nm vs Post 123.5 Nm).

**Conclusion**

The result shows the potential of Cr supplementation to improve strength and vascular health in older adults without combining it with exercise. We found a drop in Alx 75 after 4 weeks of Cr consumption which indicates improved wave reflections and reduced arterial stiffness, but PWV did not change. Thus, further data is required to statistically conclude the current findings.

Funded by CSUB Title Vb STEM Graduate Excellence Grant.

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**Abstract 2024 – 46**
**High on the Hog: Atypical Presentation of a Hamstring Rupture**
Matthew Tan, OMS III; Isabelo Bustamante, MD; Harnek Singh, MD

**Introduction**

Hamstring injuries are a common injury seen among athletes involved in sports pertaining to high-speed running or stretching to extreme lengths (1). There are many risk factors for a hamstring injury including age, ethnicity, body mass and height. Among these risks are type of sport played (1).

Here we present a case of a patient that suffered a near complete rupture of the hamstring while playing basketball. Although hamstring injuries are common in basketball, a near complete tear is rare.

**Case Description**

Patient is a 32-year-old male with no significant PMH presented after experiencing extreme posterior leg pain while playing basketball. The patient states he was playing basketball as he normally would. He was defending a player when he felt an excruciating pain in his hamstring causing him to fall to the ground. The patient was able to rise on his own and limp off the court moments afterwards. The patient's pain subsided days later and he was able to continue daily activities with minimal discomfort.

On physical exam, no erythema or swelling noted on the hamstring on the left thigh, tender to palpation at the proximal hamstring, no limit in active or passive ROM but movement noted to be very slow and cautious in comparison to contralateral leg. Left Leg X-ray was unremarkable. Left Leg MRI significant for: Near complete rupture of the proximal biceps femoris myotendinous junction with distal tendon retraction and mild soft tissue hemorrhage. Tendon gap of approximately 2.7 cm located approximately 6.9 cm below ischial tuberosity.

Patient was maintained on conservative management of rest, ice and compression. Patient was informed to avoid strenuous exercise, but permitted light movements. Referral was placed for physical therapy to advise on stretching and slow strengthening within 3-4 weeks of initial injury. Patient was continued on conservative management of physical therapy and was slowly transitioned back to sports activities 6 months later. With continued conservative management, patient underwent slow return to play.

**Discussion**

While hamstring injuries can occur in a multitude of sports, they are seen to be more prevalent in certain sports. Most high risk of the North American sports were men's baseball, soccer, and track and field (3). Although basketball players commonly have hamstring injuries, complete rupture is rare in comparison to other sports. The most common mechanism of injury of the hamstring amongst athletes occurs during the late swing phase before heel striking in the running gait cycle. This movement causes the hamstrings to undergo eccentric contractions while the hips are flexed and the knee extended(4) Actions that involve this movement include sprinting, high intensity running, stopping, starting, quick changes of direction and kicking (5).

**Conclusion**

Hamstring injuries can be seen in many different athletic settings and its rehabilitation management should be dictated with careful consideration of the injury epidemiology & other potential risk factors including the type of sport played (4). This case shows that even with minimal findings upon initial exam, sometimes it may be necessary to include hamstring rupture in the differential.

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**Abstract 2024 – 47**
**A Rare Case of Staghorn Calculus in a Pediatric Patient**

Thiagarajan Nandhagopal, MD; Abdolhakim Mohamed, MS III; Robert Collins, MS III; Ranbir Sandhu, MD; Chezhiyan Murugesan, MD

**Introduction**

Staghorn Calculus are most commonly composed of Struvite (Magnesium Ammonium Phosphate) and are formed by urease-producing pathogens. While the prevalence of urolithiasis is associated with older populations, pediatric urolithiasis is uncommon in developed countries with a prevalence of 1–5%. In the USA, it accounts for about 1 in 1000 pediatric hospital admissions. If left untreated, it can cause significant morbidity due to sequelae such as pyelonephritis or urosepsis, diminished renal function, or even renal failure; hence, prompt assessment and treatment are of utmost importance.

**Case Description**

An infant male born full term with an uncomplicated birth history and a PMH of influenza A, presented to the ED with nausea and one episode of NBNB vomiting. The patient was febrile, tachycardic and was feeding, voiding, and stooling well. CBC w/ diff showed leukocytosis and elevated CRP. Urinalysis returned as cloudy urine with positive large leukocyte esterase, negative nitrites, large blood, > 50 RBCs, > 50 WBCs, moderate bacteria, and WBC

clumps. Retroperitoneal ultrasound of the kidneys showed the left and right kidneys at 7 cm in length. Renal stones were seen in the left kidney, the largest at 2.7 x 0.7 cm, without signs of hydronephrosis. The right kidney was unremarkable.

A follow-up abdominal X-ray visualized the presence of a 1.6 x 1.4 cm staghorn calculus in the left kidney. Urine culture grew Proteus Mirabilis and he was treated with ceftriaxone and PRN Acetaminophen. He remained afebrile for 3 days, with down-trending CRP, and was discharged with Cefadroxil. The patient was referred to Pediatric Urology at Valley Children's Hospital and has since followed up with Valley Children's Nephrology for outpatient treatment and surgical resolution of the staghorn calculus.

**Discussion**

Renal staghorn calculus is typically associated with older patient populations due to the extended period required for P. mirabilis infection to induce kidney stone formation, thereby resulting in a lower suspicion of diagnosis in a pediatric patient. In this case, a pediatric patient with a medical history significant for Influenza A presented to the ED with acute fever and vomiting.

Given the patient's age, acute or recurrent infections or congenital causes were deemed as primary considerations and prioritized to guide the initial workup. Through comprehensive blood work, urinalysis, imaging studies, and heightened suspicion of pyelonephritis, an unexpected presence of a left renal staghorn calculus was discovered.

**Conclusion**

Although renal staghorn calculi are rare occurrences in pediatric patients, this case highlights renal stones as an appropriate differential diagnosis for febrile and vomiting infants that present acutely to a physician. This case report adds to and accentuates the need for expanded research and documentation in pediatric urolithiasis, which currently lacks in comparison to its adult counterpart.

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**Abstract 2024 – 48**
**Evaluating the Clinical Utility of the Urethral Compression Test for Women Undergoing Midurethral Sling**

Diem Samantha Tran, DO; Ashley Rietmann, OMS III; Yufan Brandon Chen, MD

**Introduction**

The midurethral sling is often used for the surgical management of female stress urinary incontinence. As a part of our preoperative physical examination for patients with stress urinary incontinence, we perform a novel test called the urethral compression test.

**Purpose of Study**

The pathophysiology of female stress urinary incontinence is multifaceted, however the success of the midurethral sling has been attributed to the restoration of support at the mid urethra (1). The urethral compression test was created to simulate the support at the mid urethra and predict the efficacy of midurethral sling placement. It is a cough stress test in which we place gentle pressure at the mid urethra during valsalva and see if continence is restored. If leakage does resolve, we consider this a positive urethral compression test. Our goal with this study is to examine if a positive urethral compression test is more predictive of the success of a midurethral sling compared with not performing one.

**Methods**

We performed a retrospective cohort study examining de-identified patients who had a midurethral sling performed by a single provider between 1/1/2021 and 12/31/2023. We compared the success of a midurethral sling in patients that had a positive urethral compression test with those that had a no urethral compression test performed. The primary outcome was treatment success, which was defined as no leakage of urine due to stress incontinence following the procedure.

**Summary of Results**

Our study examined a total of 114 women with stress urinary incontinence. Mean age of the study population was 50.5 ± 9 and mean BMI was 31.2 ± 6. 88 of the patients identified as Hispanic, 23

identified as non-Hispanic white, and 3 identified as another race or ethnicity. Mean parity was 3.4 ± 1. Mean number of vaginal deliveries was 3.2 ± 1. 4 patients had a previous midurethral sling. 26 patients had a past medical history of diabetes. 31 patients had a retropubic midurethral sling placed and 83 patients had a single incision adjustable midurethral sling placed. See Table 1. We used a fisher exact test to compare the success and failure of midurethral slings placed in patients that had a positive urethral compression test and those that did not have one done. We did not find a statistically significant difference between the two groups (p = 0.3545).

**Discussion**

Based on our findings, the rates of success of midurethral slings were statistically similar in both groups - those that had a positive urethral compression test and those who did not have the test performed. However, we believe that this test does still have clinical utility. It is a non-invasive test that can provide the clinician, as well as the patient, with feedback on the expected result of a midurethral sling on a patient's stress incontinence symptoms.

**Conclusions**

The midurethral sling is the gold standard for surgical management of female stress urinary incontinence. A preoperative physical examination is vital to evaluating each patient, and a cough stress test, urethral hypermobility, and urethral compression test can help guide management. As we continue to use the urethral compression test in our physical examination, we can reevaluate this data in a larger, more diverse patient population. Additionally, we can compare the efficacy of this test with the retropubic versus single incision midurethral slings.

***Table 1: Demographics of the Study Population***

| **Characteristic** | **(N = 114)** |
|---|---|
| **Age** | 50.5 ± 9 |
| **BMI** | 31.2 ± 6 |
| **Race or ethnic group** | |
| Hispanic | 88 |
| Non-Hispanic White | 23 |
| Non-Hispanic Other | 3 |
| **Parity** | 3.4 ± 1 |
| **Previous Vaginal Deliveries** | 3.2 ± 1 |
| **Previous Sling** | 4 |
| **History of Diabetes** | 26 |
| **Sling Placed** | |
| Retropubic Sling | 31 |
| Single Incision Sling | 83 |

***Table 2: Fisher Exact Table***

| | Success | Failure | *Marginal Totals* |
|---|---|---|---|
| Positive UCT | 26 | 6 | 32 |
| No UCT | 73 | 9 | 82 |
| *Marginal Totals* | 99 | 15 | 114 |

***Fisher exact test statistic value: 0.3545***

***For a list of references cited in this abstract, please contact researchforum@kernmedical.com.***

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**Abstract 2024 – 49**

**Constipation-Induced Delirium**

Mahum Zahid, MD; Elaine Deemer, DO; Norka Quillatupa, MD

**Introduction**

Delirium affects approximated 30% of all inpatient geriatric patients. Developing delirium increases likelihood of institutionalization, higher mortality, longer hospital stays, and complications. One known preventable causes of delirium in older patients is constipation. The prevalence of constipation in the geriatric population is estimated at 50%. Constipation can result in delirium and may manifest as dehydration or nausea, with eventual progression to fecal impaction or bowel obstruction. In the inpatient setting, early diagnosis and treatment of constipation can decrease duration and incidence of preventable delirium.

**Case Description**

Patient is a 79-year-old male with history of Parkinson's dementia, hypertension, and type 2 diabetes mellitus, who presented to clinic for "being disoriented." Patient suddenly requiring diapers and occasionally forgetting how to dress himself. Daughter contacted geriatrician via telephone. Since

patient endorse urinary retention, urinalysis and retroperitoneal ultrasound were ordered which were normal. However, daughter called again for worsening symptoms, such as walking into walls. Patient eventually taken to the emergency department. CT head without contrast was negative for acute intracranial abnormalities. Chest radiographs negative for acute cardiopulmonary processes. Laboratory findings were normal and patient was discharged with the diagnosis of new onset dementia.

Daughter follows up with geriatrician, as patient is still confused. Physician ordered labs, MRI, and abdominal radiographs. MRI brain with and without contrast showed diffuse atrophy and periventricular white matter ischemic small vessel disease. Laboratory values within normal limits. Abdominal radiographs show moderate constipation and no bowel obstruction. Daughter reports patient has not had a bowel movement in a few days, despite using suppositories. Plan initiated to increase bowel regimen to senna and MiraLAX twice a day, with goal to achieve at least 2 bowel movements per day for 3-4 days. Follow-up via telephone a few days later revealed patient's mentation returned to baseline, such as dressing and showering himself.

**Discussion**

Constipation-induced delirium is a common diagnosis seen within geriatric medicine, but is not well known amongst general physicians. Due to the COVID-19 pandemic, the patient was unable to attend in-clinic geriatric medicine appointments. As seen in this case, misdiagnosis in the emergency department delayed this patient's treatment. Patients with delirium have been found to have twice the 30-day mortality rate, and 1.2-fold higher 30-day readmission rate as compared to patients without delirium. Misdiagnosis of delirium with dementia in elderly patients can be avoided by using the Confusion Assessment Method(CAM) screening tool.5 The diagnosis and treatment of constipation is low-cost with relatively swift results. Constipation can be managed with pharmacological or non-pharmacological methods, depending on what is most suitable to the individual patient, and should be considered in all delirious patients. Adequate training to diagnose delirium for all physicians could improve patient outcomes. Routinely assessing patients for constipation, with management with titration of bowel regiments, will contribute to helping decrease the occurrence of delirium. Ultimately, this patient case illustrates the importance of prompt diagnosis and treatment of constipation in the setting of delirium. Since prompt treatment can lead to decrease hospital stays, unnecessary diagnostic tests, and even mortality.

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**Abstract 2024 – 50**

**Challenges of Hyponatremia in a Patient with SIADH with Reset Osmostat**

Nabhan Kamal, MS IV; Edvard Davtyan, MD; Sabitha Eppanapally, MD

**Introduction**

Reset Osmostat is a rare subtype of SIADH (syndrome of inappropriate antidiuretic hormone), characterized by a change in the normal plasma osmolality threshold for ADH secretion and can deplete sodium levels that remain chronically low. Sodium is an essential electrolyte that is responsible for regulating fluid balance, blood pressure, and nerve conduction to muscles and nerve cells. We present this case of SIADH complicated by Reset Osmostat with significant challenges in managing symptomatic hyponatremia.

**Case Description**

A 62-year-old woman with medical history significant only for idiopathic SIADH not tolerating tolvaptan presents to the emergency department from nephrology clinic with symptomatic severe hyponatremia. At arrival patient is obtunded and weak with bilateral peripheral neuropathy of her lower extremities. Initial laboratory reports sodium 118 mmol/L, despite outpatient management with sodium tablet 2 g twice daily, furosemide 40 mg twice daily and 1L fluid restriction. Further workup while inpatient demonstrates normal adrenal and thyroid functions, serum plasma osmolality (258 mOsm/kg), urinary sodium (29 mmol/L) and elevated urine osmolality (632 mOsm/kg). Patient was initiated on home regimen with strict 1L fluid restriction and addition of Ure-Na 15g BID gradually increased to 30g in the a.m. and 15g in pm. Despite optimal medical therapy sodium never improved more than 126 mmol/L. However, patient had symptomatic improvement and decrease in urine osmolality to 229 mOsm/kg. Throughout hospital

course serum uric acid levels remained low and patient was non-edematous. Based on labs and clinical presentation with chronic hyponatremia, diagnosis of SIADH with reset osmostat was given. At present patient's sodium levels range 122-126mmol/L, remains asymptomatic and is currently under investigation of autoimmune disorders as possible cause of reset osmostat.

**Discussion & Conclusion**

SIADH can be subdivided into four subtypes (A, B, C, D); subtype A is what is commonly referred to as the "classic" subtype of SIADH in clinical practice. Subtype C of SIADH is a unique hypoosmolar hypotonic condition and is called Reset Osmostat. Reset Osmostat hyponatremia results from an alteration in osmoreceptor cells' metabolism, which induces ADH secretion at lower plasma osmolarities. Typically, patients are euvolemic with normal renal, adrenal, and thyroid function. Most cases are difficult to diagnose because patients are asymptomatic. However, our patient did complain of symptoms including fatigue, weakness, and bilateral peripheral neuropathy/paresthesia in her lower extremities. Symptomatic hyponatremia such as this case is challenging to treat as the osmostat is set at lower threshold. This case is noteworthy as the patient presented with symptoms of acute severe hyponatremia that obscured the underlying chronic illness and simultaneously presented challenges in treatment.

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**Abstract 2024 – 51**
**From Room Air to ICU: A Case of Aspergillus, Pseudomonas, and Coccidioidomycosis**
Lovedip Kooner, MD; Ejodakeme Okojie, MD; Funmilayo Idemudia, MD; Ralph Garcia-Pacheco, MD; Royce Johnson, MD; Jacqueline Uy, MD

**Introduction**

The global frequency of endemic mycoses is increasing and underscores the importance of timely diagnosis and treatment. Coccidioidomycosis, caused by Coccidioides immitis and Coccidioides posadasii, is a dimorphic, soil-dwelling fungal infection endemic to the Western Hemisphere Among these fungal infections, coccidioidomycosis poses a significant challenge due to its ability to mimic common respiratory illnesses. X-rays and CT scans can show small pulmonary nodules, cavitary lesions, pneumonic infiltrates, and pleural effusions. Dissemination can manifest anywhere in the body. It is paramount to have an early diagnosis and treatment. We present case study of a 49-year-old woman with a complex medical history who was initially misdiagnosed with a viral illness but later diagnosed with pulmonary coccidioidomycosis.

**Case Description**

A 49-year-old female, with a history of uncontrolled diabetes mellitus type 2, hypertension, and end-stage renal disease (ESRD) on hemodialysis, presented with a range of symptoms including fatigue, odynophagia, nausea, cough, vomiting, and diarrhea. Despite an initial evaluation at an urgent care facility where she was diagnosed with a viral illness, her symptoms worsened over six days, leading to an ED visit.

Upon admission, vital signs indicated hypertension, tachycardia, and fever. Physical examination revealed persistent nonproductive cough and abnormal lung sounds. Laboratory investigations showed leukocytosis, hyperglycemia, and elevated procalcitonin levels. Imaging studies revealed pulmonary abnormalities consistent with pneumonia, leading to a diagnosis of cavitary pneumonia. Empirical antibiotic therapy was initiated with ceftriaxone, azithromycin, and fluconazole.

Coccidioidal serology was initially non-reactive. Throat culture was positive for Pseudomonas, blood test was positive for aspergillus antigen, and the patient was started on IV cefepime and ceftriaxone was discontinued. Despite antibiotic therapy, her condition deteriorated rapidly, necessitating ICU admission with increased demand for supplemental oxygen until mechanical ventilation was needed. Subsequent bronchoscopy confirmed the diagnosis of pulmonary coccidioidomycosis.

Treatment was adjusted to intravenous liposomal amphotericin B and adjunctive methylprednisolone, leading to clinical improvement. On day ten of hospitalization a repeat coccidioidal immunodiffusion IgM and IgG were reactive. After extubation, IV amphotericin B was continued, and she was discharged with a tapering course of oral prednisone. Chest x-rays demonstrated improved lung imaging. Close follow-up and continued antifungal therapy were planned.

**Discussion**

This case highlights the importance of considering fungal infections in patients with pneumonia presentations, especially in endemic regions and in patients with predisposing factors. Despite initial evaluation and treatment for a viral illness and then bacterial illness, the patient's clinical course deteriorated, emphasizing the need for a thorough diagnostic workup and consideration of alternative etiologies.

**Conclusion**

Imaging studies, including chest X-ray and CT scan, play a crucial role in identifying characteristic findings of coccidioidomycosis, such as pulmonary nodules and cavitary lesions. However, serological tests may initially yield false-negative results, necessitating further diagnostic modalities such as bronchoscopy for definitive diagnosis. Once diagnosed, prompt initiation of appropriate antifungal therapy is paramount to prevent disease progression and dissemination. In this case, treatment with intravenous liposomal amphotericin B and adjunctive corticosteroids led to clinical improvement and resolution of symptoms. This case underscores that recognition and appropriate management are crucial in preventing disease progression and improving outcomes.

**Images 1-5: X-ray images showing the progression of pulmonary coccidioidomycosis to miliary disease and the improvement following initiation of Amphotericin B.**

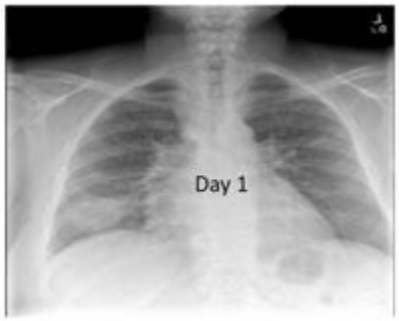


**Image 1**

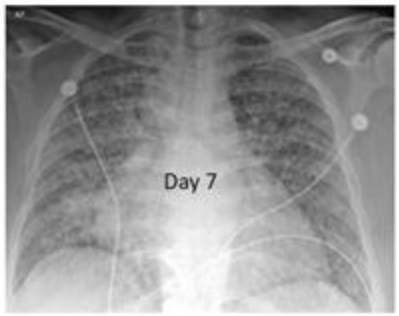


**Image 2**

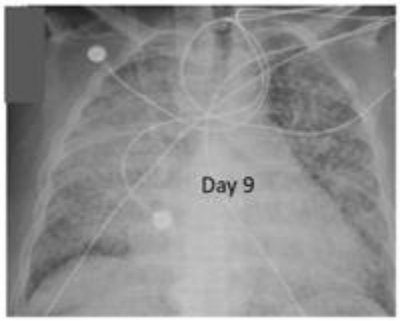


**Image 3**

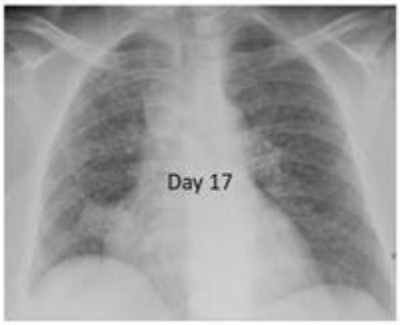


**Image 4**

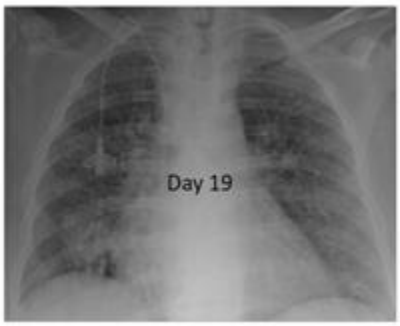


**Image 5**


**Image 6: A: Oxygen saturation percentage (blue line), treatment and testing (blue arrow), and timing of increased Oxygen flow rate (red star) of patient prior to ICU admission.**

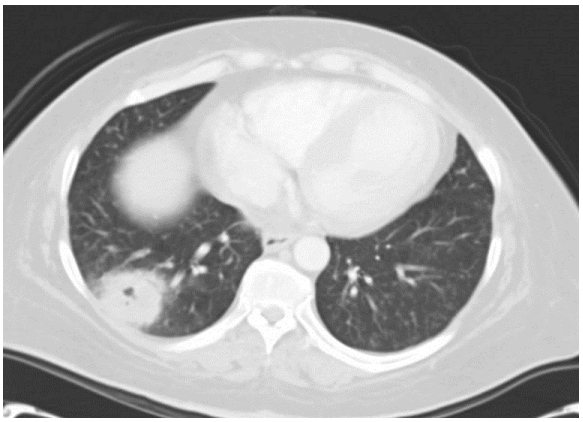

**Image 7: CT chest demonstrating a right lower lobe coccidioidal pulmonary cavity, in the setting of miliary Coccidioidomycosis.**

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**Abstract 2024 – 52**
**Hydrocephalus as Initial Presentation of Coccidioidal Meningitis**

Leepakshi Johar, OMS IV; Edvard Davtyan, MD; Janpreet Bhandohal, MD

**Introduction**

Coccidioidomycosis is an infection caused by the fungus Coccidiodes imitis and C. poasadasii and is prominent in southwestern United States and Central and South America. This infection is transmitted via inhalation of fungal spores. In 2019, CDC reported that there were 20,300 Valley Fever cases, with most of them in Arizona or California. One of the most severe extrapulmonary coccidioidomycosis is coccidioidomycosis meningitis.

Typical presentation of coccidioidomycosis meningitis includes headaches that can be persistent, progressively worse, or have unusual severity. Patients can also present with fever, nausea, vomiting, blurry vision, photophobia, altered mental status, hearing difficulties.

**Methods**

A retrospective review following IRB approval.

**Case Description**

A 60-year-old Hispanic female and agricultural worker who presented to the Emergency Department for 10 days of nausea and intermittent presyncope symptoms associated occasionally with mild headaches.

No pertinent findings on physical exam and CBC with differential and general chemistry were unremarkable. CT Head without contrast demonstrated acute hydrocephalus with dilated lateral, third and fourth ventricles suggesting obstruction at the basal cisterns. Potential etiologies for hydrocephalus considered at the time were infectious versus chronic meningitis versus autoimmune versus metabolic vs idiopathic. MRI Brain with and without contrast showed communicating hydrocephalus.

Lumbar puncture was completed and it showed CSF Cocci IgM IgG were positive, 1:128 titer. Serum IgM and IgG were positive 1:32 titer. Patient was treated with fluconazole 1000 mg IV daily inpatient, which was switched to fluconazole 1200 mg PO daily after discharge. After hospital discharge, she presented to the Infectious Disease outpatient follow-up appointment with no symptoms after antifungal treatment. Lumbar puncture and cocci serology are pending after treatment.

**Discussion**

All patients are initially treated with antifungal therapy, but hydrocephalus can develop regardless. Anatomic shunt combined with Ommaya reservoir insertion intrathecal therapy is usually definitive for symptomatic relief in coccidioidal meningitis with

hydrocephalus. Further standardized workup is needed to assess for atypical meningitis presentations in a timely manner.

**Conclusion**

Our patient did not present with the typical signs of meningitis, but instead presented initially with hydrocephalus symptoms. In addition, symptoms started ten days ago, which is unconventional because Coccidioidal meningitis typically presents weeks to months after initial infection. Our patient's symptoms resolved with antifungal treatment and did not require the typical Ommaya reservoir insertion intrathecal therapy for hydrocephalus.

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**Abstract 2024 – 53**

**A Rare Case of Fluconazole Induced Drug Reaction with Eosinophilia and Systemic Symptoms (Dress)**

Sampriti Thapa, MS III; Verna Marquez, MD; Carol Avila, MD; Ranbir Sandhu, MD; Timiiye Yomi, MD; Su Hlaing, MD

**Introduction**

Drug rash with eosinophilia and systemic symptoms (DRESS) is a rare severe drug-related allergic reaction. DRESS is typically associated with morbilliform rash, along with eosinophilia, lymphadenopathy, fever, and hematologic effects. Typically, anticonvulsants and sulfonamides are associated with the drug related DRESS reactions. Due to the multisystem organ involvement that can occur later, DRESS is linked with a mortality rate of 10% among patients that are diagnosed with it.

When researching DRESS, there were few cases reported on DRESS being associated with Fluconazole treatment in patients. This is a 19-year-old female with no past medical history who was diagnosed with Coccidiomycosis in January 2024 and subsequently began Fluconazole treatment, which then resulted in her developing DRESS syndrome.

**Case Description**

A 19-year-old female with no past medical history presented to the ED with a pruritic and painful morbilliform rash for the past week, 4 weeks after beginning Fluconazole treatment for Coccidioidomycosis. Patient initially presented to her PCP in the beginning of January and was asymptomatic at the time, other than a diagnosis of erythema nodosum. Cocci serology was done and revealed coccioidal antibodies with CF titer of 1:8. She was then started on Fluconazole. Symptoms began to develop afterwards such as posterior auricular lymphadenopathy, feeling of fullness on face, and throat tightness. Patient went to several urgent cares and symptoms failed to improve with diphenhydramine treatment.

The patient also discontinued Fluconazole use 2 days prior to hospitalization. Initial laboratory findings were significant for leukocytosis, elevated AST/ALT, and eosinophilia. The patient then developed a fever on day 4 of hospitalization (103.1F). On day 7, lab results showed up trending leukocytosis and eosinophilia. Patient was treated with corticosteroids despite increased risk of exacerbation of pulmonary cocci. After discharge, further lab work with the PCP revealed high free T4 and low TSH, subsequently diagnosing patient with thyroid dysfunction related to visceral organ involvement in DRESS.

**Discussion**

DRESS syndrome is a rare drug induced reaction, and there are no reported cases with fluconazole use. Typically, the diagnosis is made clinically. In this case, the Registry for Severe Cutaneous Adverse Reactions (RegiSCAR) was utilized to determine definitive diagnosis of DRESS. Patient presented with definitive DRESS diagnosis, as noted through fever, enlarged lymph nodes, eosinophilia, skin rash, and multiple organ involvement (score of 8). While use of corticosteroids can be debated for those with Coccidiomycosis, a definitive diagnosis of DRESS made it important to treat the patient for current symptoms. Currently, up trending AST and ALT has begun to resolve along with rash. Patient will continue with corticosteroid treatment along with Posaconazole for Coccidiomycosis. Patient will also continue following up with ID and hematology/oncology.

**Conclusion**

Being in the Central Valley, there is a high rate of Coccidioidomycosis in the area, with many being treated with Fluconazole. However, there have not been studies showing that Fluconazole can cause DRESS. Therefore, understanding the manifestation of DRESS in patients, along with management, is very

important to allow for better outcomes when dealing with adverse drug reactions such as this one.

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**Abstract 2024 – 54**
**The Correlation between Socioeconomic Status and Change in the Ejection Fraction in Patients with Methamphetamine-Induced Cardiomyopathy**
Haidar Hajeh, MD; Austin Garcia, MD; Jesslin Abraham, MD; Elias Inga Jaco, MD; Matthew Kranitz, MD; Lovedip Kooner, MD; Raahem Zafar, MS IV; Theingi Tiffany Win, MD

**Introduction**

Methamphetamines are cardiotoxic addictive agents that result in cardiomyopathy, pulmonary hypertension and arrhythmias. It is speculated that drug abuse is more prevalent in patients with low socioeconomic status. This study is designed to understand the correlation between socioeconomic status and the change in left ventricular ejection fraction (LVEF) in methamphetamine-induced cardiomyopathy (MICM).

**Methods**

We identified 63 patients with MICM from 792 patients diagnosed with heart failure in a single academic medical center in central California during the year 2020. Subjects were divided into 2 groups based on their socioeconomic status; a high socioeconomic status group (represented by Area Deprivation Index (ADI) of <50% of national percentile) and a low socioeconomic status group (ADI >/= 50%). Mean LVEF values were compared between the 2 groups and clinical significance was determined.

ADI is an index created by the Health Resources and Services Administration and refined by the University of Wisconsin that uses 17 markers of socioeconomic status. Higher ADI values represent lower socioeconomic status and vice versa.

**Summary of Results**

Patients with a higher ADI (lower socioeconomic status) had an average improvement in LVEF of 2.96 while patients with a lower ADI had an average improvement in LVEF of 10.55 with a p-value of 0.011.

**Discussion**

The results of this study show that there is a correlation between high socioeconomic status and improvement in ejection fraction in patients with heart failure secondary to methamphetamine use. This could be related to multiple social and economic factors including low understanding of the nature of the disease, poor follow up, noncompliance with medical management due to educational, social or financial constraints among others. Although it is beyond the aim of this study to quantify which factors play a more important role, using the ADI as a cumulative result to all these individual factors is a practical method that represents socioeconomic status.

**Conclusions**

High socioeconomic status is correlated with a more substantial improvement in left ventricular ejection fraction than low socioeconomic status.

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**Abstract 2024 – 55**
**First Breaths: An Exploratory Study Evaluating the Potential to Create Personalized 3D-Printed CPAP Masks for Preterm Infants**
Natasha Holden, OMS II; Jane Park, OMS III; Jessica Son, OMS II; Timon Tran, OMS III; Gary Wisser, BS; Katherine Mitsouras, PhD

**Purpose of Study**

The American Academy of Pediatrics recommends continuous positive airway pressure (CPAP) therapy with selective surfactant administration in preterm infants who are at risk for neonatal respiratory distress. However, nasal trauma is a frequent complication

in very low birthweight preterm infants using CPAP masks with nasal prongs for extended periods. Mask fit issues can also result in high leakage that may prolong reliance on these masks, which in turn may delay initiation of oral feeds, prolong hospitalization, limit infant holding, and interfere with the effective and timely implementation of developmental therapies. The application of 3D-printed CPAP masks provides an exciting opportunity for preterm neonatal care, since 3D-printing of CPAP masks is already an emerging field in pediatric medicine,

particularly for children with craniofacial abnormalities and obstructive sleep apnea. Research assessing the application and technical protocols for integrating 3D-printed CPAP masks into preterm neonatal care is currently very limited. To this end, this exploratory study aims to extend current literature and describe a framework for the creation of a prototype and workflow that optimizes the efficacy of personalized 3D-printed CPAP masks within the context of preterm neonatal care.

**Methods**

Images of preterm neonate models were obtained via the Apple® 3D facial scanning application Qlone©. Three-dimensional preterm neonate models were created with the 3D modelling software Blender® using Boolean modifier tools to create a negative space to form fit the mask to the model's face. Fisher and Paykel Healthcare™ neonatal nasal prongs and masks were used as reference points for industry standard ventilation port dimensions.

**Results and Discussion**

Prongs warrant a customizable approach, as numerous studies suggest that there is a high risk of neonatal nasal injury resulting from ill-fit. Masks alleviate this stress, but inappropriate fits may cause pressure ulcers or unwanted airway leakage. Our workflow model incorporates both customizable prong inserts and personalized masks in an attempt to reduce prong-induced septal pressure and consequent septal injury. Moreover, our proposed workflow allows for straightforward submission of acquired images to our program, which can then print the CPAP masks on-site if a 3D-printing machine is available, or off-site for overnight delivery.

**Conclusions**

This technology and platform are accessible in the US healthcare system without requirements for advanced technical knowledge or infrastructure to 3D-print, and reinforces that 3D-printing neonatal CPAP masks is not only feasible, but holds the potential to improve device efficacy and neonatal patient comfort. Shortcomings of this study include limitations in access to neonatal patients for direct facial scanning, and lack of resources to test device efficacy. We plan to extend the results of our exploratory study by performing air leakage testing to assess functionality, and pressure analysis as a proxy to assess comfort.

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**Abstract 2024 – 56**

**A Rare Case of Systemic Sclerosis with Membranous Nephropathy and Focal Segmental Glomerulosclerosis**

Hridya Harimohan, MD; Quynh Huynh, MD; Rohini Bilagi, MD; Stephanie Drodz, MS IV; Sabitha Eppanapally, MD

**Introduction**

Systemic sclerosis is a chronic multisystem disease characterized by widespread vascular dysfunction and progressive fibrosis of the skin and internal organs. The most common renal manifestation of systemic sclerosis is the sclerodermal renal crisis, a life-threatening emergency. Some individuals of systemic sclerosis are initially asymptomatic or show only mild proteinuria, microscopic hematuria, and occasional casts. These patients follow an indolent course until hypertension and progressive deterioration of kidney function develop.

**Case Presentation**

34-year-old female presented to the Internal Medicine clinic with generalized swelling of legs, arms and face for 1 month. Swelling of legs persisted even after supportive measures and later developed more generalized swelling including hands and face. She denied any urinary symptoms. Urinalysis showed proteinuria and albumin-creatinine ratio was significantly elevated to 7,685. 24-hour urine protein was elevated to 18,034mg/24 hour and 24-hour urine microalbumin was elevated to 13,390mg/24hour. A renal biopsy was done which showed membranous nephropathy, PLA2R negative and THSD7A negative with secondary focal segmental glomerulosclerosis. Further infectious and cancer work-up was negative. Autoimmune serology was ordered. ANA was found to be positive which showed centromere pattern, and the titer was elevated to 1:320. Anticentromere antibody was tested and was positive (3.9).

Patient was treated with Losartan 50 mg daily and the urine albumin-creatinine ratio markedly decreased to 360 over a period of six months and to 91.2 over a period of 1 year. Patient did not have any other clinical manifestations of systemic sclerosis. The patient is also being followed up to monitor for

any progression of proteinuria and development of other clinical features of systemic sclerosis.

**Discussion**

Very few cases of membranous nephropathy have been reported in patients with systemic sclerosis. In most cases, they were related to the use of D-penicillamine but in a few patients, no cause of scleroderma was identified. Subepithelial deposits were seen on electron microscopy of these patients, suggesting that autoantibodies directed against Scl-70, centromere or polymerase III may cause formation of in-situ immune complexes. Even after thorough review of literature, we could not find any cases of FSGS in patients with systemic sclerosis. This case highlights a rare renal manifestation of systemic sclerosis with no other clinical features illustrating the need for prompt treatment and close follow up.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 57**
**Acute Pulmonary Coccidioidomycosis with Bronchial Casts in Sputum**
Shikha Mishra, MD; Michelle Fang, PharmD; Bianca Torres, RA; Kevin Chen, OMS III; Michael Valdez, MD; Carlos D'Assumpcao, MD; Royce Johnson, MD; Rasha Kuran, MD

**Introduction**

Bronchial casts are rare occurrences, and their presence is not commonly associated with pulmonary coccidioidomycosis (cocci). The presence of bronchial cast is a notable finding, and cocci may be considered in differential diagnosis.

**Case Description**

Our patient was a 63-year-old male with history of diabetes mellitus who developed flulike symptoms with sharp right anterior chest pain upon coughing and coughed up tree branch-like mucus that appeared to be bronchial casts. He was diagnosed with pneumonia and was given antibiotics but did not respond to antibacterial therapy. Due to persistence of symptoms 3 months later, he was tested for coccidioidomycosis. Coccidioides serology was positive with IgM and IgG. Chest x-ray revealed a 12 cm area of opacification involving the right upper lobe. A CT chest was performed which showed a large confluent consolidation involving the right upper lobe. Numerous irregular patchy and nodular opacities were noted throughout the lungs, in addition to mediastinal lymphadenopathy, mild hepatomegaly, and 2 right adrenal gland nodules. A bone scan revealed activity in the right ribs and left hip. MRI of the hip suggested left gluteus minimus and maximus tendinosis involvement.

The patient was started on fluconazole 800 mg daily. The Coccidioides immunodiffusion study was repeated 6 months from first presentation which revealed IgM reactive weakly, IgG reactive, and complement fixation titer of 1:8, along with a fluconazole level of 41.7 mcg/mL. A repeat bone scan showed likely post-traumatic uptake at the right anterior 4th rib and no abnormal uptake suspicious for bony infection. One year later, patient developed rash with fluconazole and was switched to itraconazole. Patient tolerated Itraconazole and completed two years of therapy with itraconazole. Off therapy, he had three CF titers <1:2 over a 9-month interval. Patient is doing well and has no complaints on follow-ups.

**Discussion**

The clinical picture of plastic bronchitis, which is characterized by bronchial cast formation, is comparable to other chronic respiratory illnesses, which include nonspecific flulike symptoms, pleuritic chest pain, and productive cough. In cases where pulmonary infection associated with bronchial cast formation does not resolve with antibiotics, there should be a high index of suspicion for pulmonary coccidiomycosis, especially with travel to regions endemic for coccidiomycosis. Coccidioides serology should be ordered early as part of the routine diagnostic workup of pulmonary infection with associated bronchial casts to allow for the most appropriate course of care. While the formation of bronchial casts is usually idiopathic and occur at any age, the literature provides only a few cases that focus specifically on pulmonary infectious etiologies in adults, with minimal discussion of pulmonary coccidiomycosis. It would be crucial to further investigate the association between coccidiomycosis and bronchial casts and explore potential mechanisms underlying bronchial cast formation.

**Conclusion**

Although coccidioidomycosis most commonly presents with pulmonary disease, bronchial casts are very rare and have not been frequently reported with coccidioidomycosis in the literature. Our aim is to highlight this rare case of bronchial casts associated with coccidioidomycosis. More research is needed in this particular area as it is an uncommon association.

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**Abstract 2024 – 58**
**A Case of Near SUDEP in a Refractory Epilepsy Patient Undergoing Epilepsy Monitoring Unit Evaluation in a Level 3 NAEC Community Hospital**
Kevin Chen, OMS III; Britney Ly, RA; Neela Zalmay, RA; Fowrooz Joolhar, MD; Hari Veedu, MD

**Introduction**

Sudden Unexpected Death in Epilepsy (SUDEP) is a serious phenomenon that refers to an abrupt and unforeseen demise occurring in individuals with epilepsy. "Near SUDEP" is a category of SUDEP that is defined to include cases in which cardiorespiratory arrest was reversed by resuscitation efforts with subsequent survival for more than one hour.

**Case Description**

Our patient is a right-handed 54-year-old male with a history of refractory focal epilepsy and major depressive disorder. He was admitted to a level 3 Epilepsy Center's Epilepsy Monitoring Unit (EMU) for localization of ictal onset zone and as part of epilepsy surgery presurgical workup. Seizures are poorly controlled with valproic acid and lamotrigine.

During the EMU evaluation, patient had one electroclinical seizure lasting 2 minutes and 20 seconds. Immediately at the end of the electroclinical seizure, a 90 second period of postictal diffuse EEG background suppression occurred. After the electroclinical seizure ends, an episode of apnea was seen lasting about five minutes. Roughly one minute before the clinical seizure ends, normal sinus rhythm transitions to sinus bradycardia and 13 seconds later, transitions into cardiac asystole lasting for 70 seconds. CPR was initiated 90 seconds after the onset of apnea and was applied for 150 seconds, but at that time heart rhythm had already returned to bradycardia and within a few seconds, followed by return to normal sinus rhythm.

Due to concerns of sinus bradycardia evolving into cardiac asystole associated with the first electroclinical seizure, a pacemaker was implanted. The pacemaker continues to pace, and the patient has not developed further cardiac pauses.

**Discussion**

In a patient with pharmaco-resistant focal epilepsy, the ideal management of near SUDEP is epilepsy surgery, or in nonsurgical candidates, patient should undergo at least a neuromodulation implantation. However, because our patient has poor socioeconomic status and psychiatric comorbidity, he is not willing to undergo epilepsy surgery. Also, he is not willing to undergo VNS implantation which can be done locally because of fear regarding procedural complications. To prevent near SUDEP, we decided to implant a pacemaker. We argue that pacemaker implantation may provide a means of preventing cardiac asystole which plays an important role in the SUDEP mechanism.

This case highlights the challenge of managing drug resistant epilepsy patients residing in underserved community and high risk of SUDEP, as we are not able to provide optimal management due to difficulty accessing a level 4 Epilepsy Center, where patients can undergo epilepsy surgery in complicated cases.

**Conclusion**

We report a case of near SUDEP in a patient with refractory epilepsy. The optimal management is to undergo epilepsy surgery to make the patient seizure free and prevent future SUDEP. However, because the patient has poor socioeconomic status and resides in an undeserved community, access to a level 4 Epilepsy Center to undergo intracranial monitoring to localize the ictal onset zone in this non-lesional focal epilepsy case is not possible.

Our hope is that pacemaker implantation can reduce the risk of future SUDEP because cardiac asystole has a prominent role in the pathophysiology of SUDEP.

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**Abstract 2024 – 59**

**An Aberrant Presentation in an Atypical Disease: Coccidioides immitis Dermatitis in a Young Adult**

Baldeep Mann, MD; Nihad Al-Yousfi, MD; Jesslin Abraham, MD; Henry Donsanouphit, MS IV; Oluwatoni Afolabi, MS IV; Arian Ashrafi, MS IV; Amrit Dhillon, MD

**Introduction**

Coccidioidomycosis, also known as Valley Fever, is a fungal infection caused by the inhalation of spores from Coccidioides species, endemic to the soil in certain arid regions of the Americas, including the southwestern United States, parts of Mexico, and Central and South America. This disease presents a broad spectrum of clinical manifestations, ranging from asymptomatic cases to severe pulmonary and disseminated forms, posing a significant diagnostic and therapeutic challenge.

The variability in its presentation, coupled with the potential for severe outcomes in certain populations, underscores the importance of understanding its epidemiology, clinical manifestations, diagnosis, and treatment options. Although not unheard of, cutaneous manifestation is of particular significance due to its uncommon primary presentation; scenarios such as this may pose diagnostic challenges to even the most experienced physicians.

**Case Presentation**

We report a case of a 23-year-old male with an intriguing presentation of a telangiectatic erythematous lesion filled with serosanguinous fluid, situated on the right upper chest. The patient reported tenderness and localized swelling of 2 weeks duration as the primary symptoms, with no systemic or pulmonary complaints other than localized discomfort.

Initial laboratory investigations were unremarkable except for an elevated erythrocyte sedimentation rate. A chest X-ray was ordered and displayed a faint ill-defined density projecting over the proximal right clavicle measuring 4.3cm. A CT chest with contrast was ordered which showed presence of 2 right upper lung paramediastinal masses extending down into the mediastinal fat with accompanying right hilar pathologic lymphadenopathy, and right upper chest wall and supraclavicular cellulitis with underlying subcutaneous phlegmon measuring 2.3cm in maximal diameter. Notably, the patient's residence in an endemic Coccidioidomycosis region, namely Mexico and California, coupled with occupational exposure through fruit-picking in agricultural fields, raised strong suspicions of dermatological coccidioidomycosis.

A biopsy and fluid aspiration were performed on the lesion located on the right upper chest, followed by a gram staining procedure with cultures and pathological evaluation. Dermatological biopsy showed granulomatous inflammation with PAS stain negative for fungal organisms. Subsequent cultures ultimately yielded the growth of Coccidioides immitis.

**Discussion**

Cutaneous manifestations of coccidioidomycosis are uncommon and often occur as a result of hematogenous dissemination from a pulmonary focus. The presentation of a skin lesion is particularly unusual and has not been widely reported in literature.

This case emphasizes the broad differential diagnosis for skin lesions and the need for a high index of suspicion for fungal infections, including coccidioidomycosis, in endemic areas or in patients with suggestive clinical histories, even when no respiratory symptoms are present. Early diagnosis and treatment are crucial to prevent further dissemination and complications. The management of cutaneous coccidioidomycosis involves antifungal therapy, for which our patient was treated with fluconazole.

**Conclusion**

This case highlights a rare presentation of coccidioidomycosis. It serves as a reminder of the diverse manifestations of dermatological lesions, and how comprehensive history and physical exam is still of utmost importance, even when characteristic symptoms are absent.

Further research is needed to understand the pathogenesis of cutaneous manifestations in coccidioidomycosis and thereby to optimize treatment strategies.

**Abstract 2024 – 60**

**A Review of Transvaginal Point-Of-Care Ultrasound Curriculum at a Teaching Health Center in a Resource-Limited Community**

Gagan Kooner, MD; Lovedip Kooner, MD; Carol Avila, MD; Eric Zamora, MD; Verna Marquez, MD

**Introduction**

Transvaginal point-of-care ultrasound (TV-POCUS) is an advanced bedside diagnostic and interventional tool that can rapidly assess female reproductive organs that can provide immediate results, expedited treatment and more accurate gynecologic procedures. It is relatively inexpensive, completely safe, and with no absolute contraindications. It is suitable for most patients, especially in resource-limited communities. TVPOCUS provides more detailed information and a more defined image when compared to abdominal ultrasound.

**Study Design**

This is an observational study of TV-POCUS scans performed by residents of the Rio Bravo Family Medicine Residency Program in Bakersfield, CA. Data were gathered from the electronic medical record from August 2022 to November 2023. The primary goal of the study is to qualitatively survey the resident's overall experience in TV-POCUS and quantitatively identify the different pathologies encountered during the study time frame. The study will further investigate the outcome of those patients found to have significant TV-POCUS findings.

**Results**

16 residents who used outpatient TVPOCUS completed anonymous surveys showing that 93% found this to be useful and beneficial to their residency training, 100% found TVPOCUS useful and beneficial to their patients, 87% overall experiences were satisfied very satisfied. 11 (8%) of the patients scanned have private insurance and the rest have some form of government type insurance.
165 scans were performed. Only 141 scans met the inclusion criteria. 115 (82%) scans have gynecologic related symptoms, and 26 (18%) scans were pregnancy related symptoms.

Of the obstetric scans, 14 (54%) found to have viable early trimester pregnancy with overall normal findings; 8 (31%) have non-viable pregnancy; 1 (4%) had a molar pregnancy; 2(7%) had third trimester bleeding due placenta previa;1(4%) scan was for cervical length measurement due to previous preterm delivery.

Of the gynecologic scans, 53(46%) were due to abnormal uterine bleeding; 23 (20%) pelvic pain;17(15%) history of structural abnormalities;7(6%) dyspareunia; 5(4%) IUD localization; 2 (2%) post-menopausal bleeding; 8(7%) others. Findings included PCOS, leiomyomas, adenomyomas, endometrial/cervical polyps, endometrial thickening, simple and complex ovarian cysts, displaced IUD and pelvic varices.

About 77% of the scans did not require any further imaging. The patients were reassured and instructed to follow up. 33% required follow up either with a formal US or MRI. Immediate referrals were made, and patients underwent the needed interventions and treatment. However, few patients were lost to follow up.

**Discussion & Conclusion**

By incorporating TV-POCUS education and training into family medicine residency programs residents have developed advanced skills in gynecological and obstetric assessments, bolstering their ability to provide comprehensive care to women. Residents' ability to demonstrate proper technique and interpret imaging allow them to distinguish different pathologies and identify the proper treatment. This technology serves as a valuable diagnostic tool, enabling residents to perform real-time examinations and refine their clinical acumen. Improvement of the overall experience and relevance can be measured using surveys completed anonymously by residents. Collecting patient demographic data helps to recognize the most vulnerable populations and allocate much needed resources. The implementation of TV-POCUS contributes to supporting a more patient-centered approach, fostering increased efficiency and accuracy in family medicine practices focusing on women's health.

Describe the outcome of your implementation.
The incorporation of TV-POCUS into our curriculum under direct attending supervision marks a pivotal step towards advancing women's health within our training program. By embracing this innovative technology, we've effectively transcended

geographical and financial barriers, ensuring that state-of-the-art diagnostic capabilities are accessible to residents and, consequently, the women they serve. The potential reduction in emergency room visits and wait times underscores the efficiency gains achieved through this advanced diagnostic tool. By facilitating early and precise diagnoses, residents are positioned to intervene proactively, fostering improved health outcomes.

TV-POCUS integration represents a commitment to elevating the standard of care provided by our residents. Equipping them with advanced skills not only bolsters their confidence but also positions them as adept healthcare providers capable of addressing the evolving needs of women's health. This helps to ensure that the benefits of cutting-edge technology are extended to all members of the community, regardless of geographical or financial constraints.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 61**
**Did the Ends Justify the Means? A Case of Severe Nerve Vulnerability After Use of Coban Compression Wrap**
Sharmila Thiagarajan, MS IV; Ramu Thiagarajan, MD

**Introduction**

Iatrogenic digit compressions are very common due to widespread usage of Coban wraps. They are mostly used for management of lymphedema and venous leg ulcers. Even if usage may be indicated in other clinical conditions to avoid infection, edema, and contact with water, the tightness and duration can cause unforeseen damage, contradicting its actual purpose.

**Case Description**

A 24-year-old female with no past medical history presented to urgent care after sustaining a left fourth finger laceration. Three stitches were able to stop the artery from bleeding and later had a 4m Coban strip circumferentially wrapped around the affected area. After removing the Coban wrap 48 hours later, the patient noticed new edematous bullae and erythema which continued to worsen in size. Patient was treated with oral antibiotics and given a one-time IM injection of Ceftriaxone. Patient also reported pulsating pain, numbness, and decreased range of motion of the entire left fourth finger. Wound cultures came back negative. EMG and Nerve Conduction study was performed and showed absent ulnar sensory response with mixed study testing of the median and ulnar nerves in the fourth finger. Three months later, a repeat EMG and Nerve Conduction study showed some sensory response but was insignificant. The patient continues to experience pain, weakness, and numbness with hypo and hyperpigmentation of the affected finger.

**Discussion**

This abstract highlights the importance of valuing scientific findings and changing treatment course as indicated. In this case report, patient's elicited pain out of proportion to initial injury, new skin changes, and persistent numbness despite routine measures, required special intervention to ultimately improve the patient's outcome. Despite the convenience of compression wraps especially in urgent/emergency care settings, supportive care to the highest degree is expected. [1] A gap occurs when providers do not take into account the impact of certain practices that impose a great threat to vulnerable tissues and nerves, leading to unforeseen consequences. Medical personnel in such settings need to be educated through courses that reinforce their knowledge in order to provide treatments that hold safety, beneficence, and nonmaleficence at its core. [2] This study continues to support the ongoing research of nerve regeneration after trauma.

**Conclusion**

This case illustrates that applying circumferential dressings precisely, especially pertaining to the digits are crucial in the beginning stages of an open wound. This was an iatrogenic nerve injury that could have resulted in ischemia or necrosis, requiring interventions such as surgical decompression or even amputation of the digit. Educating and recognizing the harm due to improper care should be entertained and absolved for future cases.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 62**

**Spinal Cord Involvement with Coccidioidal Meningitis: A Case Series of 45 Adult Patients**

Bianca Torres, RA; Chelsea Dunn, MS IV; Danish Khalid, MD; Rupam Sharma, MD; Lovedip Kooner, MD; Michael Valdez, MD; Shikha Mishra, MD; Carlos D'Assumpcao, MD Royce Johnson, MD; Rasha Kuran, MD

**Introduction**

Central nervous system (CNS) involvement with coccidioidomycosis (cocci) is a serious infection that is universally fatal if not treated. Prior to the advent of magnetic resonance imaging (MRI), very few reports describe spinal cord involvement and autopsies often omitted spinal cord examination. Accurate and anatomic localization of areas affected by CNS cocci can be challenging due to mental status changes and the presence of brain abnormalities. Here, we describe radiologic and clinical characteristics of 45 cases of CNS cocci who had spinal MRI imaging performed.

**Purpose of Study**

What is the diagnostic criteria for spinal cord involvement with coccidioidal meningitis, also known as arachnoiditis?

**Methods**

This was a retrospective case series reviewing 45 adult patients at the Valley Fever Institute in Bakersfield, California with patients who had confirmed CNS cocci and MRI of at least one segment of the spinal image with and without contrast between 2011-2024. A waiver of consent was submitted, and approval was obtained by Kern Medical's Institutional Review Board. ICD 9 and ICD 10 codes were used to query electronic health record and cross referenced with completed imaging.

Each record reviewed required inclusion criteria of age above 18 years, cerebrospinal fluid (CSF) abnormalities compatible with chronic meningitis and one of the following: positive CSF IgG antibody, CSF complement fixation (CF) for coccidioides or growth of coccidioides on CSF culture. MRI Imaging with and without contrast of at least one of the following: cervical, thoracic or lumbar spine.

**Results**

80% of the patients were Latinx, 11% African American, 4% Asian and 4% Caucasian. Males make up the majority at 73%. Spinal cord abnormalities can be asymptomatic with the most common symptom of back pain followed by radiculopathy.

**Discussion**

CNS Cocci is a devastating form of coccidioidomycosis. It is a progressive disease that can be fatal if left untreated. Currently, management involves lifelong azoles as therapy. Some complication of CNS Cocci includes elevated intracranial pressure and hydrocephalus, however there are less studied complication such as arachnoiditis amongst others. Arachnoiditis refers to inflammation and scarring of the arachnoid mater, the central layer of membranes covering the spinal cord, and the ensuing process causing fibrinous exudates, adhesions, clumps in the thecal sac.

Unfortunately, diagnosing arachnoiditis is hard to discern from CNS cocci and doesn't have a definitive diagnosis criterion. Symptomology and radiological findings have been used to identify the complication however both are not needed or must be present to make the diagnosis. Additionally, these findings can be overlapping with those with CNS cocci. Here we identified components that can help us get closer to a criterion for diagnosis of cocci arachnoiditis. With these findings we believe that those with CNS cocci should be imaged for possible arachnoiditis as a standard of care for patients to improve patient outcome.

**Conclusion**

Coccidioidal meningitis frequently involves the spinal cord. Radiologic findings include leptomeningeal enhancement, adhesive arachnoiditis with nerve root clumping, myelitis and syringomyelia. Heightened awareness is required due to unpredictable symptomatology. This suggests potential benefit of performing MRI imaging on the entire neuro-axis at the time of diagnosis.

**Abstract 2024 – 63**

**To Infliximab and Beyond: Using Immunotherapy as Alternative Treatment Option for Treatment Resistant Depression**

Sharmila Thiagarajan, MS IV; Hridya Harimohan, MD; B. Quynh Huynh, MD

**Introduction**

Treating resistant depression has become difficult as the standard medications have not shown much improvement. This has led to a search for other options such as immunotherapy commonly used in autoimmune diseases.

**Purpose of Study**

To better understand the role of biologics, such as TNF-alpha inhibitors and interleukin inhibitors for treatment resistant depression (TRD).

**Methods**

We performed a systematic review of studies published in Medline, Embase, Google Scholar and PubMed during 1995-January 2024.

Results: Depression is understood as a disorder with several pathways overlapping from changes seen in both genetic and environmental components. Due to the "heterogeneity in biological mechanisms of depression;" [1,2] at least 30% of patients have not responded to common antidepressants. [3,4,5] One theory that explains this is the "cytokine theory of depression." In times of infection, inflammation, and stress, there is an increase in cytokines such as C-reactive protein (CRP), IL-1, IL-6, and TNF-alpha in both peripheral and central circulations.[4,5] TNF-alpha in particular can activate the p38 MAPK and create a catalytic response in the activation of SERT (serotonergic terminals) allowing for a decrease in the uptake of serotonin.[4,6,7] TNF-alpha and interleukins also play a role in the cell inflammation causing damage to the neuronal plasticity which can induce abnormalities in the signaling pathways seen in numerous mood disorders.[8,9]

Upon thorough literature review, infliximab, a monoclonal antibody, has been shown to have favorable effects on depression. In all, three studies (114 patients) were included; two studies were randomized clinical trials using infliximab infusions in TRD patients and the other study utilized 2 case reports (1 patient with TRD; and other with bipolar disorder) both treated with etanercept.[7,10,11] The results from the studies indicated that patients undergoing infliximab infusions had reduction in depressive symptoms, specifically those who had high levels of inflammation markers.[10,11] The studies also suggested that patients with low levels of inflammation seemed to do worse on infliximab therapy than those receiving the placebo treatment.[4,11] Patients that received etanercept mimicked similar results as those in the infliximab study. This identifies a subgroup of TRD patients who have high levels of inflammatory markers and responded clinically better to TNF-alpha inhibitors. Results in the study showcased participants treated with TNF-alpha inhibitors did experience a reduction in their symptoms and overall improvement in their mental health.

Looking at interleukin inhibitors, there is an ongoing clinical trial currently in Phase 2 on the usage of ixekizumab, an IL-17 inhibitor for TRD patients.[12] This study shows promise as it is the first one of its kinds to specifically evaluate an interleukin inhibitor in TRD patients alone. Apart from this trial, there are quite a few studies focusing on other TNF-alpha inhibitors (etanercept, adalimumab) and interleukin inhibitors (IL-1, IL-6, IL-17, IL-23) as treatment in autoimmune disease patients who experience symptoms of depression. [4,12] As they do help reduce those symptoms it begs the question for the reason behind it. Is it due to the mental stress of living with a chronic disease or due to an underlying connection that autoimmune diseases cause major depressive disorder and/or TRD? [13,14,15]

Two studies specifically excluded patients with any autoimmune diseases and found that patients solely with MDD/TRD had reduction in symptoms and less inflammation markers (TNF-alpha, IL-6, and CRP) when treated with infliximab.[11,12] More studies are needed to evaluate the efficacy of interleukin inhibitors and TNF-alpha inhibitors specifically in healthy TRD patients in order to initiate immunotherapy as possible treatment.

**Conclusion**

Our literature review reveals that as a class of immunotherapy, TNF-alpha inhibitors like infliximab offer alternative options for refractory depression. Furthermore, newer biologics such as interleukins inhibitors IL-17 and IL-23 have been evaluated and found to be effective in the treatment of refractory

depression. However, confounders such as coexisting depression associated with living with chronic illness, more studies are needed to differentiate these types of patients with TRD patients. Additionally, further investigation is required to elucidate the potential role of the other numerous inflammatory cytokines in the treatment of TRD.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 64**
**Diagnostic Approach for Generalized Lymphadenopathy**
Elizabeth Evers, MSIV; Colby Kulyn, MD; Saakshi Dulani, OMS IV; Shikha Mishra, MD; Carlos D'Assumpcao, MD; Kasey Fox, DO

**Introduction**

Generalized lymphadenopathy poses diagnostic challenges due to diverse etiologies, including oncologic, hematologic, infectious, and autoimmune causes. This case highlights autoimmune generalized lymphadenopathy that mimicked oncological and infectious etiologies.

**Case Report**

A 34-year-old male had a few months of night sweats, fevers and weight loss. Primary care found anemia and hematuria. Initial imaging found lymphadenopathy of iliac chain and periaortic lymph nodes, axillary lymph nodes. Subsequent imaging found expansion of pelvic lymph nodes engulfing the left ureter with development of left hydronephrosis. He continued to have anemia requiring blood transfusion. Over the next few months, he underwent a bone marrow biopsy and two excisional lymph node biopsies. An oncological diagnosis could not be made. He then developed a neck mass in the left submandibular triangle with Fusobacterium nucleatum anaerobic bacteremia. He was diagnosed with acute sialadenitis.

An exhaustive work up of infectious causes of lymphadenopathy found only prior exposure to CMV and EBV and Coxiella Phase I and Phase II 1:64 only. However, a standard autoimmune work up found positive ANA 1:320, dsDNA 1:160, low C3 and low C4, Sjogren's SS-A antibody, Smith Antibodies. His anaerobic bacteremia and possible Q fever was treated with 14 days of metronidazole and doxycycline respectively. He was subsequently followed outpatient with rheumatology and started on prednisone with symptomatic improvement.

**Discussion**

This case found evidence of autoimmune and infectious origins. Notably, there is the possibility for false positive serological tests in patients with autoimmune disorders. Inversely, though less likely in this case, consideration should be given to potential induction of autoimmune responses following viral infections. Our case shows how physicians should utilize available testing while carefully considering the limitations of the tests.

**Conclusion**

This case highlights a unique scenario of prolonged lymphadenopathy, culminating in an acute presentation initially suggestive of infection or malignancy. A collaborative, multidisciplinary approach uncovered supportive evidence for autoimmune and infectious origins, with lack of histologic malignancy confirmation.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 65**
**Exploring the Pandemic: An Overview of the Characteristics of Patients Diagnosed with Methamphetamine-Induced Cardiomyopathy**
Haidar Hajeh, MD; Matthew Tan, OMS III; Olivia Weller, MS IV; Anna Bjarvin, OMS III; Breeanna Carlson, OMS III; Mira Patel, OMS III, Fowrooz Joolhar, MD

**Introduction**

Methamphetamines, known for their addictive nature, are cardiotoxic substances that lead to conditions like cardiomyopathy, pulmonary hypertension, and arrhythmias. Understanding the populations where methamphetamine use is the most prevalent is essential to take actions against this pandemic. This study is designed to review the characteristics of patients diagnosed with methamphetamine-induced cardiomyopathy (MICM)

and compare them to patients with cardiomyopathy of other causes.

**Purpose of Study**

What are the unique characteristics of patients diagnosed with methamphetamine-induced cardiomyopathy that distinguishes them from patients with other causes of cardiomyopathy.

**Methods**

We reviewed 1325 charts of patients diagnosed with heart failure in the period (January 2020 - July 2021). We excluded 29 patients for missing data and included the remaining 1296 patients in the analysis. Patients included 309 patients with MICM (23.84%) and the remaining 987 patients with non-MICM (76.15). Data collected included age, gender, race, insurance type, number of all-cause hospitalizations, mortality and cardiology clinic appointment attendance.

**Summary of Results**

Data from both the MICM and the non-MICM groups was collected and presented in the form of numbers and percentages. Mean age of patients in the MICM group was 54.1 years compared to 62.7 in the non-MICM group. Data also showed similar racial distribution among the groups (white race represented 84.7% of MICM, and 86.2% of non-MICM). Males were more predominant in the MICM group than the non-MICM group (68.9% compared to 57.6% respectively). Most patients in the MICM group had MediCal as their primary insurance (60.0%) as compared to a tie between Medical and Medicare in the non-MICM (43.7% and 43.4% respectively). Mortality was 6.8% in MICM compared to 9.6% in non-MICM.

Patients in the MICM group were hospitalized about 2 times on average since their diagnosis compared to an average of 1.2 hospitalizations in the non-MICM group. Lastly, patients of the MICM group attended 54.8% of their cardiology clinic appointments compared to 64.9% in the non-MICM group.

**Discussion**

The results of the study reveal some similarities and differences between the 2 populations of patients who are diagnosed with heart failure. The MICM patients were younger than patients with non-MICM which perhaps explains the higher mortality in the non-MICM group as older age and the higher prevalence of cardiac comorbidities (hypertension, diabetes.) in the older populations leads to increased mortality. There was a higher prevalence of the male gender in MICM patients compared to a lower (but still predominant) percentage in the non-MICM group. Race however, was similar between both groups with higher prevalence of white race in both groups. Most patients of the MICM group had Medical as their primary insurance. This may reflect the low socioeconomic status in the communities where methamphetamine use is encountered the most.

Patients in the MICM group had more hospital admissions and less compliance with cardiology clinic follow ups compared to the non-MICM group. This demonstrates the reliance of MICM patients on hospitals on an emergent basis instead of a regular follow up approach in clinics. This probably has an impact on the healthcare system by overwhelming the hospitals and impeding proper long-term management in clinics which may have prevented recurrent hospitalizations.

**Conclusions**

Methamphetamine-induced cardiomyopathy patients and patients with cardiomyopathy due to other causes are 2 different populations with unique characteristics and traits. Understanding the MICM population will allow us to employ effective methods that relieve the negative impact MICM has on the healthcare system.

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**Abstract 2024 – 66**
**Spirochete Infection Induced Bitemporal Limbic Encephalitis in an Elderly Male**
Adriana Rodriguez, MS IV; Edvard Davtyan, MD; Melanie Khamlong, MD; Baldeep Mann, MD

**Purpose**

Limbic encephalitis is a clinical syndrome characterized by acute or subacute changes to mood and behavior, short-term memory deficits, cognitive decline, and structural and functional changes to the mediotemporal regions of the brain. It has been often defined as a paraneoplastic syndrome most

commonly associated with small cell lung carcinoma. Otherwise, when no underlying occult neoplasm is found, autoimmune etiology is frequently suspected and, in many cases, proven to be symptomatically responsive to immunotherapy. However, cases of limbic encephalitis are not solely exclusive to paraneoplastic and/or autoimmune etiologies, but also viral such as HSV. In rare cases, limbic encephalitis has also been associated with Treponema pallidum. We present the case of a 72-year-old man who presented with altered mental status, short-term memory deficits, and cognitive decline.

**Case Presentation**

A 73-year-old male with history of hypertension, HFrEF 25%, CKD and dementia altered mental status, short-term memory deficits, and cognitive decline. Upon evaluation, MMSE 16/30 suggested cognitive impairment. Laboratory workup was significant for positive syphilis RPR and FTS-ABS with 1:4 titer, and HSV2 IgG without HSV2 DNA PCR. MRI Brain without contrast showed T2 hyperintensity involving the bilateral medical temporal lobes, suggesting encephalitis. CSF showed increased proteins and no HSV DNA or HSV antibody. Physical examination findings were significant for altered mental status, short-term memory deficits, and palmar lesions bilaterally. Extensive investigation including labs and imaging did indicate any additional reason for patient's presentation.

Patient was subsequently treated for neurosyphilis with Penicillin G IV therapy for the duration of two weeks. Patient's cognitive symptoms, short-term memory deficits, and altered mental status improved significantly over the course of his treatment. Upon collateral information obtained from family members, he had returned to his baseline dementia, and was discharged to skilled nursing facility.

**Discussion**

Neurosyphilis is commonly classified into early and late forms, but recent cases have shown atypical presentations that mimic herpes and autoimmune encephalitis. This patient presenting with acute-to-progressive cognitive changes, limbic symptoms, bilateral mediotemporal lesions on MRI suggesting encephalitis, and positive RPR and FTS-ABS benefited from Penicillin G IV therapy neurosyphilis as he was able to return to baseline mental status.

**Conclusion**

Limbic encephalitis is commonly associated with paraneoplastic syndromes and autoimmunity. However, it can also be due to other infectious etiologies such as HSV and in rare instances, Treponema pallidum. Neurosyphilis can present at various stages of infection, which is why it is imperative to identify and initiate treatment. This particular case is noteworthy as patient presented with confusion increased from baseline dementia and MRI findings of bitemporal limbic encephalitis with positive serum RPR; demonstrating response to neurosyphilis treatment.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 67**
**The Impact of the COVID-19 Pandemic on Violence: Did Rates of Traumatic Injuries Decline After the Pandemic?**
Essam Hashem, MS IV; Elizabeth Evers, MS IV; Zara'a Alshami; BS; Christopher Aldaco, BS; Amber Jones, DO

**Introduction**

Public health safety measures implemented in response to the COVID-19 pandemic created significant social and economic hardships, leading to an increase in violent trauma across the country. This study aims to identify trends of violence in Kern County throughout the COVID-19 pandemic.

**Purpose of Study**

The purpose of this study is to determine if the rise in violence has normalized since the discontinuation of the stay-at-home orders implemented during the COVID-19 pandemic.

**Methods**

This is a retrospective cross-sectional study using Kern Medical's trauma registry to identify patients 18 or older with intentional penetrating and blunt trauma defined as gunshot wounds (GSW), stab wounds or assaults who presented to Kern Medical between March 2019 and March 2023. Patients were excluded if the mechanism of injury was

deemed unintentional or a form of self-harm. The study periods were designated as pre-Covid: March 2019 to February 2020, COVID: March 2020 to February 2021, post-COVID year 1 (PCY1): March 2021 to February 2022, and post-COVID year 2 (PCY 2): March 2022 to February 2023. Kern county was divided into 5 regions based on Zip codes: Northwest (NW): 93312,93314; Northeast (NE): 93301, 93305, 93306, 93308; Southeast (SE): 93304, 93307, 93309, 93241; Southwest (SW): 93311, 93313; and Rural: all other zip codes. The average income for each division of Kern County was identified using the 2022 Census bureau and divided into two groups, above and below $50 thousand annual salary per household.

**Summary of Results**

The COVID-19 pandemic showed an increase in violence and trauma admissions from every region of Kern County. Gunshot wounds increased in every region, and more than doubled in the lower income regions of Kern County such as the NE and SE. Stab wounds increased in the lower income regions but decreased in higher income and rural areas of Kern County during the pandemic. Blunt force assaults only increased in the NE during the pandemic but decreased in all other regions. Overall, most of the violence has decreased since the end of the COVID-19 pandemic. Gunshot wound admissions have decreased in every region of Kern County since the end of the pandemic; however, they have not returned to pre-pandemic levels. Stab wounds have decreased in all regions since the pandemic and have even fallen to less than pre-pandemic rates. The exception is SE Bakersfield, whose stab wound rates are below the COVID rates, but still above pre-covid rates. Blunt force assaults have decreased dramatically in all regions since the end of the pandemic and have reached much lower rates than pre-pandemic rates.

**Discussion**

The COVID-19 pandemic was an unprecedented global catastrophe that impacted the entire world. To combat the pandemic, stay-at-home orders were implemented to limit the spread of the virus. An unforeseen consequence of the stay-at-home orders was an increase in violent crime. Many studies have explored the increased violence during the pandemic and have attempted to explain the rationale. However, since the stay-at-home orders were removed and the pandemic is now seemingly under control, we wanted to explore if those increased rates of violence have normalized, or if they were maintained as the new baseline. Our study found that violence has decreased in Kern County since the stay-at-home order was removed, but the question remains, why? Previous studies explored the idea that forcing people to be home has a negative impact on mental well-being and makes people more prone to violent outbursts. So once people were allowed to go back into the world, tensions were eased, and less violence occurred. That may have contributed to the decrease in violence, but there could be other reasons as well. New laws and community programs such as the California Violence Intervention Program adopted 2021 could have influenced our study's results as well. They reported a 37% decrease in homicides in the first year of their program (2022), and another 29% decrease in homicides in their second year (2023).

**Conclusion**

Hospital admission rates due to violent crimes have declined since the end of the COVID-19 pandemic. Systemic changes to local law enforcement that occurred in the same period could have also influenced this downward trend. The rise seen during the pandemic can help us target at-risk populations that may have a propensity for increased rates of violence during times of socio-economic hardship. Analyzing the unique stressors placed on our communities during this period allows us to focus efforts on primary prevention to facilitate further decline in rates of violence.

***For a table that summarizes the findings of this case series, contact researchforum@kernmedical.com.***

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**Abstract 2024 – 68**
**An Unexpected Discovery: Unveiling Malignant Melanoma**

Simon Lalehzarian, MS III; Gagan Kooner, MD; Fiona Axelsson, MD; Harnek Singh, MD

**Introduction**

Skin cancer is the most commonly diagnosed cancer in the United States. Melanoma, which constitutes 1% of skin cancer, is a tumor produced by the

malignant transformation of melanocytes. Although melanoma is rare, the incidence of melanoma worldwide is rising dramatically, and despite increased efforts at screening, mortality rates have not appreciably improved. To improve patient outcomes, a thorough examination of the skin is vital in symptomatic individuals. Here, we evaluate the case of a "sebaceous cyst" removal where there were no clinical indicators to suspect melanoma.

**Case Description**

A 36-year-old female with no significant past medical history presented with a subcutaneous "bump" on her left forearm for the last 2 years, with no associated skin color changes. She reported new enlargement and burning pain at the site with tingling of her left fingers. She received two ultrasounds one year apart, the first stated "probable sebaceous cyst" and she was recommended to have it removed. The repeat ultrasound one year later revealed a 6x5x4mm complex mass, and read "possible sebaceous cyst". Due to her symptoms, she was scheduled for a cyst removal. During the procedure, the mass did not behave like a sebaceous cyst. It was flattened, darkened and very firm, whereas a sebaceous cyst would be round, soft and fluctuant. The decision was made to send to pathology. She received 7 sutures and Bactrim due to the complex nature of the removal. At wound check 4 days later, the burning pain and tingling had resolved and the wound was healing well. Two weeks after removal, pathology results showed "invasive malignant melanoma with margins involved, unclear if metastatic or primary". On physical exam, there were scattered nevi and a 7cm round, soft, nontender, non-discolored subcutaneous mass of her right upper back that she has had for six years. She also reported an aggressive family history of melanoma in her extended family. Patient was referred to dermatology, medical and surgical oncology for further management.

**Discussion**

Obtaining a thorough family history in primary care patients can help guide care and screening. A visual skin examination utilizing the "ABCDE" rule which looks for asymmetry, border irregularity, non-uniform color, diameter > 6mm, and evolution over time or the "ugly duckling" sign could be of value. In our case, the patient had no skin changes to suggest a primary or metastatic melanoma. Maintaining a broad differential is pivotal, particularly in rare cases such as ours, where the initial diagnosis differs from the final diagnosis.

**Conclusion**

In one study of clinically benign lesions that were excised, only 0.33% were found to be malignant (Milton, et al. 2021). Throughout their lifetime, patients will experience a wide range of skin growths and changes. While most skin lesions are benign and can be diagnosed on the basis of history and clinical exam, physicians should always consider melanoma as a differential diagnosis. Any lesion that is suggestive of melanoma requires a wide excisional biopsy by a surgeon as tumor thickness will dictate prognosis and treatment.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 69**
**A Case of Cannabis Induced Pediatric Catatonia, Management and Challenges in a Community-Based Setting**
Hyun Kyung Lee, MD; Ahmad Stanackzai, MD; Howard Cheung, MD; Sarayu Vasan, MD; Mohammed Molla, MD

**Introduction**

Catatonia was first described by Karl Kahlbaum in the late 19th century. It is characterized by motor and behavioral symptoms often associated with psychiatric illness. Pediatric catatonia is rare (only 0.6% in the pediatric inpatient population), but a severe neuropsychiatric condition. This abstract seeks to provide an overview of pediatric catatonia secondary to cannabis use, its treatment modalities, and the unique challenges faced during management in a community setting.

**Case Description**

We discuss a case of a 15-year-old female presented with symptoms of catatonia including mutism, stupor, incontinence, withdrawal, and psychosis. Medical work up was completed to rule out organic causes. The patient was hospitalized for 127 days in a pediatric inpatient unit with treatments including IV or PO Lorazepam (titrated up to 24 mg total), trial of

antipsychotics (Initially Risperidone later Zyprexa) and Amantadine as adjunctive treatment with intermittent TPN due to malnutrition. The patient's behavior gradually showed slight improvement, transitioning from mutism and stupor to exhibiting eye-tracking, echolalia, and reactive behaviors. This case report will delve into the challenges encountered in diagnosing and treating catatonia, particularly in relation to consent for Electroconvulsive Therapy (ECT) for treatment-resistant catatonia cases in pediatric patients.

**Discussion**

Catatonia is a severe psychiatric diagnosis but is rare in the pediatric population and understudied yet life-threatening and requires careful examination to determine etiology. Pediatric Catatonia Rating Scale is an adapted form of Bush Francis Catatonia Rating Scale for its use in child/adolescents, with the addition of incontinence, acrocyanosis, schizophasia, and automatic compulsive movements, with exclusion of mitgehen, gegenhalten and grasp reflex, etc. In our case of pediatric catatonia, diagnostic challenges include the patient being a poor historian due to mutism, recent history of psychotic and suicidal behavior, her urine toxicology showed cannabinoids, and her genetic predisposition from maternal schizophrenia. Organic causes were ruled out thorough work ups (head MRI, EEG, LP, ANA, etc). The patient showed a response to escalating doses of lorazepam; nevertheless, this response was hindered by persistent symptoms. Consequently, patient needed augmentation with Amantadine and antipsychotics. Throughout the course, the lorazepam was alternated between IV and PO due to safety concerns for hypotension. ECT was indicated for treatment resistant catatonia but was unable to be utilized due to California law requiring a court order. Upon discharge, the high dose of lorazepam also created a barrier for patient to obtain treatment in an outpatient setting. This case illustrates the challenges in management of pediatric catatonia in a community setting.

**Conclusion**

In conclusion, in this specific case of catatonia secondary to cannabis use, there are barriers to management which include difficulty for patient's participation secondary to their symptom. In many cases, it requires a high dose of lorazepam which could have many risks of side effects in the pediatric population. The ability to access ECT for pediatric patients in California also presents a notable obstacle where patients under 12 are not ineligible for ECT and patients between 13 and 17 require specialized reviews and/or legal procedures, which significantly impede patients from receiving care for this critical condition.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 70**
**Effects of Phone vs. In-Person Visits on A1C in Underserved Diabetics**
Kiranpreet Singh, PharmD; Michelle Chu, BS; David Lash, PharmD; Jeff Jolliff, PharmD

**Introduction**

The growing surge in diabetes prevalence presents a formidable public health challenge, disproportionately impacting low-income populations where access to traditional healthcare services is often limited by financial, geographical, and systematic barriers. Telephonic visits offer the flexibility to reach more of these underserved communities, but the effectiveness of these visits has not been well established. The Kern Medical diabetes clinic serves a predominantly California Medicaid (Medi-Cal) covered patient population and has been utilizing telephonic visits since the start of the COVID-19 pandemic. This study aims to determine if telephonic visits offer similar outcomes in controlling hemoglobin A1c (A1c) levels in our diabetic population as compared to in-person visits.

**Methodology**

We conducted a retrospective analysis of the Kern Medical diabetes clinic between January 2021 and June 2023. Eligible participants were newly enrolled, non-pregnant individuals aged 18 years or older with a diagnosis of type 2 diabetes mellitus. Inclusion criteria required patients to have an initial A1c level above 6.9% with at least one follow-up visit and repeat A1c 6 to 12 months after initial consultation. Patients with at least 50% of their diabetes management visits conducted via phone were categorized into the telephonic group (Tele) while those that had less than 50% of their visits conducted via phone were classified as the in-person

group (InP). The primary outcome of this study was the difference in proportion of patients with attainment of controlled A1c, defined as an A1c level below 7%, between the Tele and InP groups. Secondary outcomes included change in A1c level, change in body weight, blood pressure control (<130/80 mmHg), and statin usage in patients 40 years of age and older. Statistical analysis was completed using independent and paired T-tests for continuous data where appropriate, Pearson's chi-squared tests were used for independent nominal data, and McNemar's tests were used for paired nominal data. Exploratory binomial logistic regression models were also constructed to evaluate the effect of multiple variable's impact on having a controlled A1c. All statistical analysis was completed with jamovi v2.3 (JASP, Amsterdam, The Netherlands).

**Results**

A total of 149 patients met the inclusion criteria and were primarily female (58%), Hispanic (77%) and a large proportion spoke Spanish (44%). Eighty (54%) patients were categorized as the InP group, and 69 (46%) as the Tele group. The Tele group were significantly younger (mean age: 46.3 ± 9.5 years vs 52.4 ± 11.4 years, $p < 0.001$) and had a higher weight at presentation (mean weight: 98.2 ± 24.9 kg vs 89.7 ± 20.6 kg, $p = 0.01$) compared to the InP group. Initial A1c levels were similar between groups (InP 10.08 ± 1.99 vs.Tele 9.77 ± 2.06, $p = 0.18$) as were all other baseline characteristics. After a mean follow up of 251 ± 83.5 days both groups showed a significant reduction in A1c from baseline (InP: -2.8 ± 2.5, $p < .0001$; Tele: -2.2 ± 2.4, $p <.0001$). There was no significant difference ($p = 0.12$) in proportion of patients with A1c <7% between the Tele group (n = 33, 48%) and the InP group (n = 44, 55%). Secondary outcomes showed no significant differences between change in A1c (InP: -2.8 ± 2.5 vs Tele: -2.2 ± 2.4, $p = 0.12$), change in weight (InP: -2.7 ± 6.5 vs Tele: -2.5 ± 9.2, $p = 0.45$), or the percentage of patients 40 years of age or older on statin therapy (InP: 88%; Tele: 90%; $p = 0.78$). More patients attained a controlled blood pressure in the InP group compared to the Tele group (58% vs 39%, $p = 0.02$). The rate of medication adverse effects leading to therapy change was significantly lower in the Tele group (10% vs 25%, $p = 0.02$). Diabetes related emergency room visits were comparable between the groups (InP: 3 vs. Tele: 5, $p = 0.345$). One patient in the Tele group had a diabetes related hospitalization during the study period. Furthermore, none of the exploratory regression models found visit type to be a predictor of controlled A1c.

**Conclusion**

Compared to in-person visits, telephone visits provided similar quality of care with comparable attainment of a goal A1c of <7% and mean reduction in A1c. Both patient groups had significant A1c reduction from baseline of over 2%, displaying the effectiveness of both visit modalities. Given the comparable results in achieving diabetes control and healthcare use between both groups, integration of telephone visits in underserved communities may provide a practical and adaptable solution which may significantly enhance access to diabetes management and support, bridging the gap in healthcare disparities and fostering improved health outcomes in these populations.

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**Abstract 2024 – 71**
**Addressing Resident Physician Burnout Through a Resident Centered Wellness Committee**
Rupam Sharma, MD; Valerie Espinoza, MD; Samantha Ratnayake, MD; Leila Moosavi, MD; Kasey Fox, DO

**Introduction**

Professional burnout among medical trainees has been identified at an increasing concern warranting immediate attention. A significant challenge for residency programs is designing and implementing effective strategies to promote resident wellness and reduce burnout. Over the past few years, particularly since the recent COVID19 pandemic, residents have experienced increased workload as patient census has increased, leading to decreased wellness activities.

**Purpose of Study**

At Kern Medical, we have seen a rise in burnout symptoms of all residents across all departments from 62.5% in February 2020 to 78% in August 2022. Among the Internal Medicine residents, 76% reported symptoms of burnout on the 2022 Wellness survey. Residents expressed feeling overwhelmed and expressed they felt service was prioritized over their education and overall wellness. The

established wellness committee consisted of faculty, without resident input. In efforts to include residents, we formed a resident run wellness committee the program consisting of two resident physicians per class in addition to chief residents. The committee also included the following faculty, wellness APD, wellness faculty chair, program coordinators and program director, as additional support. The focus of this community was to plan wellness activities and discuss and address resident concerns on a monthly basis. The aim of our project was to reduce reported burnout symptoms among the Internal Medicine residents from 76% to 66% within 6 months.

**The 5-Whys**

1. Residents feeling overwhelmed with putting service over their education.

2. Increased workload (i.e. patient census)

3. Lack of resident centered activities and residents feeling undervalued.

4. Increased difficulty with the schedule (i.e. 24-hour call).

5. Decreased wellness activities during the height of the COVID-19 pandemic.

**Methods**

The focus of the resident run wellness committee was to address resident concerns. The committee organized monthly resident centered events and quarterly outings. The committee implemented the formation of an over-flow team that managed patients independently of residents when census was high. With help of the Department of Medicine, 24-hour calls on the wards were eliminated. Resident's wellness was evaluated before and after the formation of the resident run wellness committee by the annual mandatory Wellness survey, specifically the question regarding reported symptoms of burnout.

Inclusion Criteria: Internal Medicine Residents

Exclusion Criteria: Other department residents including EM, Psych, OB/GYN, Family Medicine Fellows, and Faculty.

**Summary of Results**

We analyzed the results collected from 35 residents in the Department of Medicine after implementation of the resident run wellness committee from January 2023 to August 2023. There was an overall meaningful reduction in reported burnout rates. We surpassed our goal by achieving a reported decrease of 13% reported burnout amongst all residents that participated.

**Conclusion**

Surpassing our goal of a 10% reduction in burnout rates since the development of our resident run wellness committee emphasizes this important finding that provides useful information for our program leadership and emphasizes the need for further advancing wellness initiatives. We believe that by forming a resident run wellness committee, residents were able to be actively involved in organizing resident centered activities. In turn, this increased interest in activities compared to those previously organized by only faculty. Forming the resident run wellness committee also provided an outlet for residents to voice their concerns and provided close-looped communication of how solutions were addressed and resolved. Overall, we have seen positive results and hope this continues to progress. We also hope other programs will implement similar committees in effort to improve resident wellness and reduce burnout.

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**Abstract 2024 – 72**
**Case Series of Coccidioidomycosis and Malignancies in an Endemic Area**
Rupam Sharma, MD; Royce H. Johnson, MD; Arash Heidari, MD; Leila Moosavi, MD; Rasha Kuran, MD; Akriti Chaudhry, MD; Everardo Cobos, MD

**Introduction**

Coccidioidomycosis (CM) is a growing public health concern due to increased reported cases and evidence of geographic expansion. Coccidioidomycosis is an infection caused by the inhalation of airborne arthroconidia from the soil-dwelling fungi, Coccidioides spp. Severe CM infections can spread to other parts of the body known as disseminated disease. Since CM is a significant disease in the Central Valley of California,

the aim of this study is to elucidate whether coccioidal infections antecedent or post-malignancy are clinically different.

**Purpose of Study**

As CM is a significant disease in the Central Valley of California, the aim of this study is to elucidate whether coccioidal infections antecedent or post-malignancy are clinically different in patients at Kern Medical.

**Methods**

Retrospective chart review of patients at Kern Medical between January 2016 and March 2022 was conducted. ICD-10 codes were used to identify patients who were diagnosed with CM and malignant diseases. Inclusion criteria for coccidioidal diagnosis included evidence of IgG antibody serology and positive culture for CM at the Kern County Public Health Department or the University of California Davis Mycology laboratories. Qualifying patients' charts with the dual diagnosis were reviewed. Those charts were then abstracted for the following: patient demographic characteristics, cancer diagnosis by histopathology, and details of cancer therapy. These patients were further stratified by whether these cases were antecedent to cancer diagnosis or after.

**Summary of Results**

Our study found 3342 patients diagnosed with cancer and 1961 patients diagnosed with CM were identified. Of these patients, 53 met the inclusion criteria. The most common cancers were prostate and renal cell carcinoma. 27 patients had a cancer diagnosis before a CM diagnosis with two patients who developed disseminated disease. 26 patients had a CM diagnosis after cancer diagnosis out of whom 13 patients developed disseminated CM disease.

**Conclusions**

Our study found that those who had a CM diagnosis antecedent to a cancer diagnosis had a much higher rate of disseminated cases. This warrants the use of further screening modalities and treatment regimens for controlling CM disease before initiating cancer treatment.

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**Abstract 2024 – 73**
**Multidrug Resistant Pseudomonas Chronic Osteomyelitis MRSA Cellulitis, Large Right Atrial Mass**

Lovedip Kooner, MD; Gagan Kooner, MD; Amardeep Chetha, MD; Stephanie Garcia, MD; Maria Malave, MD; Jane Park, OMS III; Fowrooz Joolhar, MD; Verna Marquez, MD

**Introduction**

Right atrial (RA) thrombus is a rare condition with associated complicating pulmonary embolism and a mortality rate of 27% to 44%, reaching 100% in some untreated cases [1,2]. Management of thrombi can vary depending on its location and size as well as patient comorbidities. Given the lack of strong supporting studies for RA thrombi management in current literature, we present a case of a RA thrombosis of unknown origin in a paraplegic patient with multidrug resistant Pseudomonas chronic osteomyelitis and recurrent MRSA lower extremity cellulitis.

**Case Presentation**

A 29-year-old male with paraplegia, diverting loop colostomy, decubitus ulcers and a history of bilateral lower extremity recurrent cellulitis, presented to the hospital for a history of subjective fever over 3 days and left lower extremity erythema and swelling for 1 day. The patient also had a peripherally inserted central catheter (PICC) line for piperacillin-tazobactam to treat his right hip decubitus ulcer for 2 weeks. Given the lack of left lower extremity open wound and without a clear source for his left lower extremity cellulitis, transesophageal echocardiography (TEE) was performed. TEE was positive for a 3.5 cm x 1.0cm echo attached to the tricuspid valve annulus of the anterior leaflet. Subsequent CT angio showed a left lower lobar non-occluding pulmonary embolus versus an artifact. Concurrent CT pelvis with contrast showed chronic osteomyelitis with extensive remodeling erosion of the sacrum and coccyx, bilateral ischial and greater trochanters. Orthopedic surgery performed a debridement of right posterior hip sacral decubitus ulcer and bone biopsy from posterior greater trochanter, which revealed a multidrug resistant Pseudomonas aeruginosa. PICC catheter culture

revealed no growth. Cellulitis culture grew MRSA. Patient was initiated on daptomycin for MRSA cellulitis, piperacillin-tazobactam for osteomyelitis, and daily enoxaparin for anticoagulation.

**Discussion**

RA thrombosis is a rare diagnosis and is seen with risk factors including but not limited to malignancy, right heart catheterization and procoagulant states [3]. In the case of our patient, several risk factors may have contributed to the RA thrombus formation. The patient had a PICC line catheter resulting in a possible catheter-induced RA thrombi [4], albeit with a negative culture. The patient also was in a procoagulant state due to chronic osteomyelitis-induced prolonged inflammation [5]. Finally, given the patient's recurrent bacteremia from decubitus ulcers and osteomyelitis, RA mass may have had a vegetative origin, differentiation of which was limited on the TEE performed [6]. Due to the possible multifactorial causes of RA thrombosis in our patient in addition to his comorbidities, the patient was a poor surgical candidate and was elected for medical management with enoxaparin.

**Conclusion**

RA thrombus is a rare presentation with limited literature on management. Therefore it is worthwhile to investigate risk factors leading to RA thrombosis and relevant management modalities based on patient presentations. Given our patient's medical history including paraplegia, chronic osteomyelitis and recurrent PICC line placements, the patient was elected for management of RA thrombus with daily enoxaparin.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 74**
**Utilizing Large Language Models or LLMs to Increase Uptake of Patient Education Materials**
Sukhjinder Sandhu, RA; Royce Johnson, MD

**Introduction**

As new technologies change the way we communicate, improved readability of materials and increased patient uptake of information can be achieved through the implementation of these improvements. Large Language Model (LLM) Artificial Intelligence (A.I.) has taken the world by storm. Health Literacy is defined by the Centers for Disease Control and Prevention as the ability to find, understand, and use health information to make an informed healthcare decision (Centers for Disease Control and Prevention,2021). According to the Agency for Healthcare Research and Quality, Written Materials for patient education should be at a 4th to 6th level (Agency for Healthcare Research and Quality, 2020). Around 80 million Americans have low health literacy which can lead to more serious health outcomes (Nepps et al. 2023). Patients who have chronic conditions, are older and have limited education, income and do not speak English natively are all associated with low health literacy (Hickey et al. 2019). Limited health literacy leads to higher than necessary morbidity and mortality (Centers for Disease Control and Prevention, 2021).

LLMs are deep learning models that are pre-trained on vast amounts of data (AWS,2024). ChatGPT and Gemini are LLMs that can be used to help simplify patient education and help patients better understand the message they are being given. Current studies speculate that A.I. can be beneficial to patient education. Studies have shown that ChatGPT was effective in improving readability for materials regarding Craniofacial surgery (Vallurupalli et al. 2024). This study aims to simplify patient education materials regarding coccidioidomycosis to increase patient readability and information uptake.

**Purpose and Methods**

Coccidioidomycosis is a fungal infection that is endemic to the soil in areas with limited rainfall in the Western Hemisphere. While most cases are asymptomatic some can lead to more serious illness (Johnson et al. 2021). African Americans, Filipinos, patients with diabetes, pregnant women and patients with chronic conditions such as HIV/aids are at high risk for Coccidioidomycosis (Centers for Disease Control and Prevention,2022). Antifungals are prescribed for the treatment of Coccidioidomycosis. A recent study from 2023 found that the readability of patient information leaflets on antibiotics was poor and that better readability may translate to increased adherence and a decrease in the occurrence of antimicrobial resistance.

This study will be conducted by approaching English-speaking patients in the primary clinic setting. Once

the patient has given consent, they will read two materials one of which has not been modified and one of which has been modified. Then using a Likert scale and a two-tailed t-test the data will be analyzed to see if a difference was made. A Likert scale is preferred as it is easy for the patient to be able to describe if the materials were easier to read or not and allows for an accurate measurement of patient uptake. A two-tailed t-test is preferred because it can not only help create a sample mean for the original materials but will also allow us to compare the two LLMs and see which one has a bigger impact on patient uptake. The t-critical value will tell us which LLM has an impact based on the sample mean. If the t-critical value is above the sample mean it means, there was an increase an uptake of the education materials. If the t-critical value is lower than the sample mean that means, there was a decrease in patient uptake of the education materials. By harnessing the power of Artificial Intelligence patient education can become much simpler and meaningful.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 75**

**Vancomycin Associated Acute Kidney Injury Pre and Post Implementation of Bayesian Software**

Winny Guan, PharmD; Michelle Chu, BS; David Lash, PharmD; Jeff Jolliff, PharmD; Michelle Fang, PharmD

**Introduction**

Vancomycin is widely used for treatment of methicillin-resistant Staphylococcus aureus (MRSA) infections. In 2020, the American Society of Health-System Pharmacists, the Pediatric Infectious Diseases Society, the Society of Infectious Diseases Pharmacists, and the Infectious Diseases Society of America released a revised consensus guideline, recommending the dosing and therapeutic drug monitoring for vancomycin using area under the curve to minimum inhibitory concentration (AUC/MIC) for serious MRSA infections, as opposed to previously recommended trough-based dosing and monitoring. Several studies conducted since the revised guidelines found that dosing by AUC/MIC was associated with less incidence of acute kidney injury (AKI) than trough-based methods. Many hospitals have since converted to AUC/MIC dosing for vancomycin.

**Purpose of Study**

To examine how the implementation of AUC/MIC dosing utilizing Bayesian software, PrecisePK (Healthware Inc., San Diego, CA, USA), has affected the incidence of vancomycin-associated AKI at Kern Medical.

**Methods**

This is a single-center retrospective cohort study. The first study period beginning January 1, 2020 through December 31, 2020, included vancomycin that was dosed via conventional, trough-based dosing methods (trough-group). The second study period beginning January 1, 2023 through December 31, 2023, included vancomycin dosed via PrecisePK using AUC/MIC method (AUC-group). Patients ≥ 18 years of age were included if they received ≥ 48 hours of vancomycin. Patients with ESRD, vancomycin duration greater than 7 days, and patients with incomplete labs were excluded. Baseline patient demographics were collected along with comorbidities and labs, such as serum creatinine (SCr), temperature, and white blood cell (WBC) count. Follow-up data including repeat SCr, temperature, WBC count, vancomycin dosing, treatment duration, and concurrent use of nephrotoxic agents were collected. SCr levels were then used to assess the incidences of AKI, defined by 2020 IDSA guidelines and AKIN/KDIGO criteria as: SCr increase ≥ 0.5 mg/dL, SCr increase ≥ 50%, or SCr increase ≥ 0.30 mg/dL within 48 hours. The primary outcome of this study was incidence of AKI fulfilled by any of the 3 definitions during treatment.

Secondary outcomes examined time to resolution of elevated WBC, fever, infectious disease related rehospitalization, and death. Data were collected and analyzed for comorbidities associated with AKI and concurrent nephrotoxic agents. Categorical data were analyzed with Chi-Square tests, while continuous data were analyzed with T-tests. All statistical analysis was completed with jamovi v2.3 (JASP, Amsterdam, The Netherlands).

**Results**

This study included 219 patients, with 112 patients in the trough-group and 107 patients in the AUC-

group. One-hundred-forty patients in the trough-group and 113 patients in the AUC-group were excluded. In the trough-only group, patients were older (mean age 53.0 ± 15.7 years versus 46.5 ± 16.2 years, p=0.033) and had lower baseline creatinine clearance (89.5 ± 47.34 mL/min versus 119.7 ± 50.59mL/ min, p=<0.001). There were no other differences in baseline characteristics (weight, body mass index, race, ethnicity). Mean vancomycin exposure in the trough-group was 14.57 + 6.29 mg/kg/day compared to 18.08 + 45.27 mg/kg/day in the AUC-group (p=0.073). There were no differences between groups in time to elevated WBC resolution, fever resolution, infectious disease related rehospitalizations, length of stay (LOS), or death. The incidence of AKI was significantly higher in the trough-group (n=29, 25%) compared to the AUC-group (n=11, 10%, p=0.003). No comorbidities or concurrent nephrotoxic agents were associated with increased AKI in either group.

**Discussion & Conclusion**

AUC-based vancomycin dosing via Bayesian software resulted in significantly less AKI compared to traditional trough-based dosing. The number needed to treat in order to prevent one AKI with AUC-dosing is 7. While there were significant baseline differences between the trough-group and AUC-group, vancomycin dosing strategy was the only variable that was related to AKI. Our results are consistent with other studies that illustrated AUC/MIC dosing is associated with lower rates of AKI compared to traditional trough-based dosing. No differences were found between LOS, death, or rehospitalization. We did not collect information on healthcare costs. Future studies should investigate how AUC/MIC software impacts healthcare costs and expenditures.

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**Abstract 2024 – 76**

**A Rare Case of Lipoleiomyoma**

Emma Motl, MD; Yufan Brandon Chen, MD, FACOG, FPMRS

**Introduction**

Few cases of lipoleiomyomas have been reported in the literature. Leiomyomas, in contrast, are the most common benign tumors of the uterus. Leiomyomas are reported to have an approximate prevalence of 70% in Hispanic women and 80% in black women by the age of 50 years-old3. However, lipoleiomyomas are extremely uncommon and though they fall in the category of leiomyoma only have a prevalence of 0.03 to 0.2%1.

**Case Presentation**

A 43-year-old P5005 presented for enlarged uterus and stress incontinence. Her only significant history was one prior cesarean section. Preoperative MRI of the abdomen and pelvis showed a FIGO type 3 intramural fibroid measuring 10 x 14 x 15 cm (Fig I).

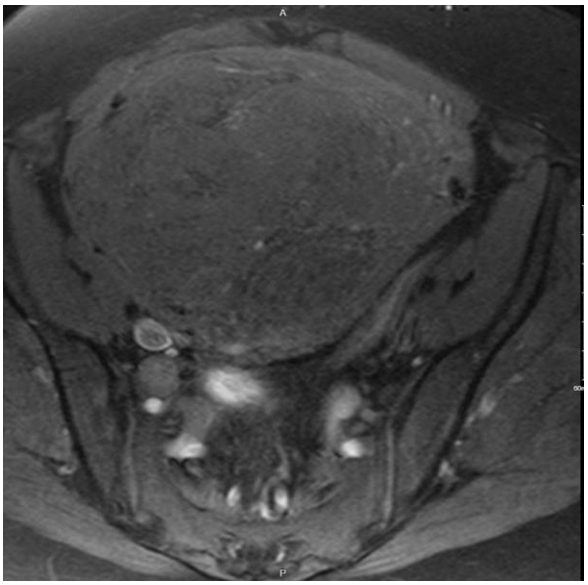

**Fig I. MRI Pelvis- showing uterine mass**

The patient noted a longstanding history of heavy vaginal bleeding requiring blood transfusion and abdominal pain/bloating. Pelvic exam revealed a mobile mass at the umbilicus with a 16wk sized uterus. At this time, we recommended total hysterectomy with robotic assistance and bulkamid injection for her stress urinary incontinence with positive cough stress test.

Surgically, ureteral stents were utilized to assist with visualization of ureters throughout the case. The enlarged uterus was noted to have dense adhesive disease to anterior abdominal wall and bilateral pelvic side walls. With improved visualization of ureters using the lighted ureteral stents we were able to safely dissect the utero-ovarian ligaments and round ligaments bilaterally and continue to mobilize the uterus. Ultimately, we opted to proceed with a supracervical hysterectomy to avoid risking

bladder injury with further lysis of adhesions and no clear planes for dissection.

As the uterus was too large to fit in an endocatch bag, we extended the umbilical incision and removed the uterus with scalpel morcellation. In total, the uterus weighed 1358g (Fig. 2 & 3).

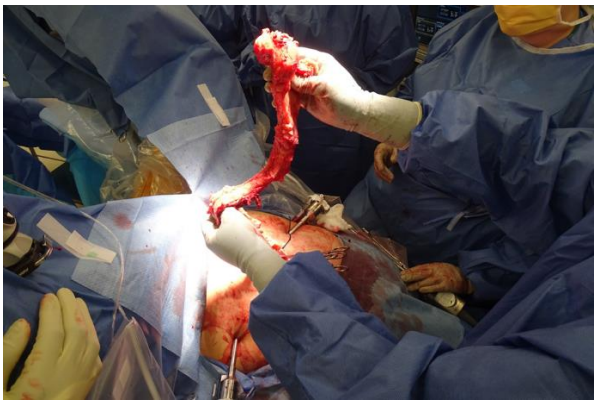

**Fig 2: Surgical incision with beginning of morcellation**

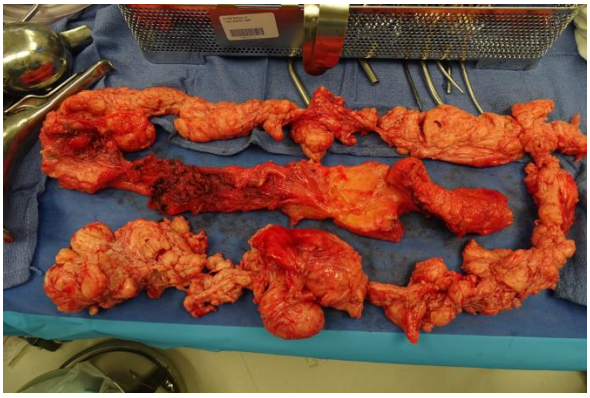

**Fig 3. Uterus after morcellation and resection**

Post-operatively the patient healed without complications. Additionally, her urinary incontinence and abdominal pain/bloating had resolved.

**Discussion**

Ultimately, the method of treatment for lipoleiomyoma remains unchanged from its more common variant, the leiomyoma. Similar to leiomyomas, they may be asymptomatic or symptomatic and treatment is based on symptoms. Most cases of lipoleiomyoma are verified after surgical resection based on histopathology. They appear to be most common in perimenopausal or post-menopausal patients1. The pathophysiology is unclear and is believed to be from lipomatous metaplasia of leiomyoma thus existing on a spectrum of the neoplasm4.

In a review of the literature, it appears most cases involved large symptomatic tumors. The documented progression to a malignancy is very rare though unclear. However, if asymptomatic, close monitoring may be acceptable.

**Conclusion**

With few cases in the literature, further study is indicated to determine the true pathophysiology and any specific management to lipoleiomyoma. It should be considered on the differential of uterine masses.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 77**
**Speedy Return to Play Following Surgical Repair of Thumb UCL Tear with Suture Tape Augmentation**
Simon Lalehzarian, MS III; Gagan Kooner, MD; Abigail Moore, ATC; Harnek Singh, MD

**Introduction**

Thumb ulnar collateral ligament (UCL) injuries are quite common in elite athletes. These injuries often occur during activities that force the thumb into extreme abduction or hyperextension. While many UCL injuries are treated nonoperatively, the presence of a Stener lesion requires surgical repair. A Stener lesion occurs when forceful abduction of the thumb avulses the distal UCL from its insertion at the base of the proximal phalanx of the thumb. Here, we present a case where a patient underwent repair of the right thumb UCL with internal brace augmentation via suture tape as opposed to suture anchor repair which provided for a more expedient return to play (RTP).

**Case Description**

A 21-year-old right-hand dominant male collegiate baseball player with no past medical history presented with right thumb pain for ten days following a hyperextension injury while catching a baseball. Patient stated his thumb feels unstable and that it “gives way” when he tries to use it. Patient

reported mild, 4/10, non-radiating, intermittent pain at the right thumb. His pain worsened with use, got better with rest, and mildly resolved with anti-inflammatories. On physical examination, the patient's right thumb showed increased girth at the metacarpophalangeal (MCP) joint and increased laxity with radial stress. There was no tenderness to palpation over the UCL at the MCP joint. He had full range of motion, was able to make a fist, and had a negative distal radioulnar joint test. MRI showed a thumb UCL tear at the MCP joint with a Stener lesion. The next day, he underwent repair of the right thumb UCL with internal brace augmentation via suture tape. At follow-up, ten days later, the patient was able to range his thumb with minimal to no pain. He was then told to wear a thumb comfort cool brace and start occupational therapy. Three weeks after the surgery, the patient was able to return to training (RTT) and four weeks postoperatively was able to RTP.

**Discussion**

The primary goal of physicians who treat these athletes is to return the athlete to competition as safely and as quickly as possible. A study done by Gibbs et al. mentions that patients with similar injuries would typically undergo repair via suture anchor and are expected to RTP between six and eight weeks. In this case, we identified a collegiate athlete who underwent repair via suture tape augmentation and was able to RTT in three weeks and RTP in four weeks. This case study provides evidence that repair of thumb UCL tear with suture tape augmentation is not only a potential alternative to suture anchor repair, but also can do so in a more expedient manner.

**Conclusion**

When a patient is suspected to have a thumb UCL injury, imaging is necessary to determine the treatment plan. If a complete tear is identified or a Stener lesion is observed, surgery is recommended as the definitive treatment. While either type of surgical repair yields excellent outcomes, suture tape augmentation can provide a quicker RTP.

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**Abstract 2024 – 78**

**Increasing Rates for Hepatitis B Vaccination in Diabetic Population in Kern County**

Akriti Chaudhry, MD; Elaine Deemer, MD; Gurpal Singh, MD; Haider Hajeh, MD; Jesslin Abraham, MD; Jigar Patel, MD; Ngon Trang, MD; Shatha Aboaid, MD; Tatum Jestila, MD; Timothy Yanni, DO; Valerie Espinoza, MD; Kasey Fox, DO

**Introduction**

Hepatitis B is a contagious liver disease caused by the hepatitis B virus. Hepatitis B has posed a major public health problem worldwide, affecting roughly 30% of the world's population determined by serological evidence of current or past infection. The virus is transmitted through contact with blood or other body fluids, such as practices of sharing needles, syringes, or other injection equipment. In addition, hepatitis B virus can spread through sexual contact and vertical transmission from an infected mother to baby during childbirth. Infection caused by the hepatitis B virus can be both acute and chronic. With prolonged, untreated infection, serious damage to the liver can lead to complications such as liver cirrhosis, liver failure, and hepatocellular carcinoma.

In 1981, a safe and effective vaccine became available. Since implementation of universal vaccination in infants there has been a sharp decline in prevalence. Given the route of transmission, patient populations that require regular injection medications, such as insulin in diabetic patients, has become a recent area of interest.

A systemic review of diabetes mellitus and the progression of hepatitis B infection performed by Younossi et al revealed that diabetes mellitus is associated with the progression of severe liver outcomes in adults with hepatitis B virus. Patients with diabetes are at increased risk for hepatitis B if they share blood glucose meters, fingerstick devices, or other diabetes-care equipment, such as syringes or insulin pens. Transmission has occurred mainly among people with diabetes who reside in assisted living facilities when several people received glucose monitoring in close succession.

In 2011, the Centers for Disease Control and Prevention and the Advisory Committee on Immunization Practices (ACIP) released new guidelines that recommend hepatitis B vaccination

for all unvaccinated adults with diabetes who are younger than 60 years of age. Vaccination should occur as soon as possible after a diagnosis of diabetes. Vaccination should also be given to adults diagnosed with diabetes in the past. For unvaccinated adults with diabetes who are 60 years and older, the ACIP recommends hepatitis B vaccination at the discretion of their healthcare provider given that the effectiveness decreases with age.

**Purpose of Study**

The goal of this project was to increase the percentage of hepatitis B vaccination in patients with diabetes mellitus at Kern Medical Internal Medicine outpatient clinic by 10% in six months. The project was faced with limitations, related to patient population, unknown vaccination status, patient noncompliance with clinic visits, patient's lack of knowledge regarding risks of hepatitis B infection, and refusal of vaccination.

**The 5-Whys**

1. Our Hepatitis B vaccination rates, in diabetic patients, are below the national average.

2. Hepatitis B virus causes acute and chronic liver infection, resulting in substantial mortality and morbidity, especially in diabetic populations.

3. There is lack of education to patients about the Hepatitis B vaccination.

4. There is lack of educational resources such as time, and pamphlets that are given to patients explaining what the Hepatitis B vaccination is and its importance.

5. Patients are unaware of risks and benefits of the vaccination and are unable to recall if they received the vaccination in the past.

**Methods**

The project was conducted by a study team of resident physicians and medical assistants at Kern Medical Internal Medicine outpatient clinic. Patients with diabetes mellitus type 1 and 2 were identified between January 2022 and March 2023. Medical assistants screened diabetic patients with a standardized questionnaire at the beginning of their visit at Kern Medical Internal Medicine clinic, with the following questions "Have you ever received Hepatitis B vaccine?", "Did you receive 3 doses of Hepatitis B vaccine?". Based on the questionnaire, we offered vaccination to those who qualified and were willing. We also created educational vaccine handouts and provided them to patients. Once the first dose of the Hepatitis B vaccine series was administered, we recorded it in our data sheet.

**Summary of Results**

Upon reviewing the Kern Medical Internal Medicine outpatient clinic data base, 197 patients were seen by the internal medicine residents between January 2022 and March 2023, with an international classification of disease code of diabetes mellitus diagnosis type 1 or 2. Of the screened patients, 17 patients were found not to have diabetes mellitus diagnosis after the chart review. Additionally, 20 out of 180 diabetic patients were found to be already vaccinated for hepatitis B. The medical assistants at Kern Medical Internal Medicine outpatient clinic reached out to the unvaccinated patients and provided education regarding the importance of the hepatitis B vaccination as instructed by the physicians. Of those contacted, 41 patients agreed to get vaccinated, but only 21 patients received the vaccine. Of the remaining screened patients, 17 patients declined to be vaccinated, 4 patients were deceased, and the rest were not vaccinated due to a multitude of reasons as seen in Figure 1. The total of patients who were vaccinated after the project started was 41 patients (22.7%) compared to 20 before (11.1%) with an improvement of (11.6%).

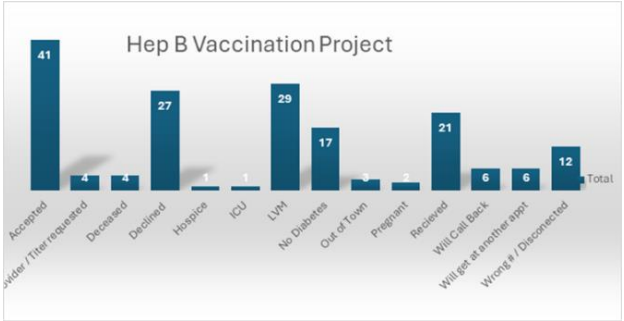


**Figure 1. Reasons for opting in or out of hepatitis B vaccination.**

**Discussion & Conclusion**

With the implementation of this project, we were able to surpass our goal of increasing the percentage

of hepatitis B vaccination in patients with diabetes mellitus at Kern Medical Internal Medicine outpatient clinic by 10% in six months. During the study period, we were able to achieve a vaccination percentage of 11.6%. Future interventions will focus on continuing to improve patient care through implementation of similar primary prevention strategies.

We hope this data helps encourage our physicians, as well as those at other institutions, to stress the importance of educating patients on primary prevention of certain diseases, especially in lower socio-economic patient populations.

***For a list of references cited in this abstract, or the figure, contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 79**
**Hidradenitis Suppurativa as Possible Risk Factor for Epidermoid Vulvar Cyst Development: A Case Report**
Daniela Amodio-Medina, MD; Eneti Tagaloa, MD; Juan Lopez, MD

**Introduction**

Epidermoid cysts are the most common types of simple dermal epithelial benign lesions. They are encapsulated subepidermal nodules that emerge from hair-bearing areas. Epidermoid cysts are commonly seen in a variety of locations such as face, trunk, neck, scalp, extremities but its occurrence in the vulva is uncommon.

**Case**

A 23-year-old nulliparous woman with hidradenitis suppurativa and obesity presented with a tender vulvar mass enlarging for the past 5 years and affecting ambulation for the past 6 months. The mass was 12x10x8cm, pedunculated, fluctuant and located on the right labia majora extending to labia minora. CT imaging showed a large cyst at the right anterior labia majora. This labial mass was surgically removed and histopathological examination confirmed diagnosis of epidermal inclusion cyst without dysplasia or malignancy. The patient was discharged from the hospital without any complications.

**Discussion**

Epidermoid cysts are benign encapsulated cysts filled with keratin content. They arise from the epidermis causing invagination towards the dermis or subcutaneous tissue. The vulva is a rare site and the structure involved is usually the clitoris. A few cases of vulvar epidermoid cyst are reported in patients without history of trauma or surgery.

The clinical presentation varies depending on the size and extension of the cyst. Typically, these cysts manifest as a slow-growing asymptomatic mass. In other cases, patients can experience difficulty walking and pain. The largest diameter reported is 12cm.

This patient presented with the classical symptoms and a medical history significant for hidradenitis suppurativa. While the patient had no surgical or trauma history, there were multiple hidradenitis suppurativa lesions in the pelvic region. Hidradenitis suppurativa is a chronic dermatologic condition characterized by skin lesions, abscesses, draining tracts and fibrotic scars. The current literature does not report hidradenitis suppurativa in patients with vulvar cysts. Given the dermatologic trauma and scarring by this condition, consideration should be given to recurrent lesions as contributing to vulvar cyst formation.

The differential diagnosis for vulvar masses is extensive and should include Bartholin cyst, lipoma, endometrioma, posttraumatic hematoma, and inguinal hernia. Vulvar malignant tumors are rare, especially in young women, with the reported incidence of malignant transformation to squamous cell carcinoma as <1%. Will very rare, vulvar malignancy is also a possible diagnosis.

Investigation should include imaging to provide information regarding location, characterization and relationship of the mass and surrounding tissue. Surgical management is standard in large or symptomatic cysts. Asymptomatic masses can be monitored with serial imaging. Diagnosis of epidermoid cysts is only confirmed by histopathologic examination.

**Conclusion**

Vulvar epidermoid cysts are rare and the most common etiology is trauma. Differential diagnosis of

vulvar mass should include vulvar epidermoid cysts, even without history of trauma. Consideration should be given to hidradenitis suppurativa as a possible risk factor for vulvar epidermoid cyst lesion formation. More evidence is needed to determine whether patients with HS are at increased risk for epidermoid cyst formation.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 80**
**Disseminated Histoplasmosis Diagnosed During Cervical Cancer Work-Up**
Eboni Pearce, MSN; Amin Ramzan, MD; Carlos D'Assumpcao, MD

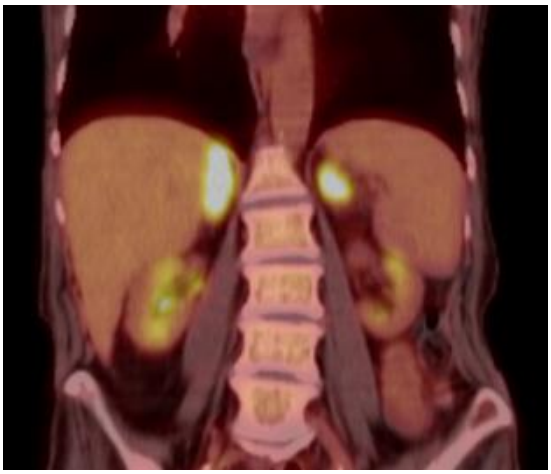
**Introduction**

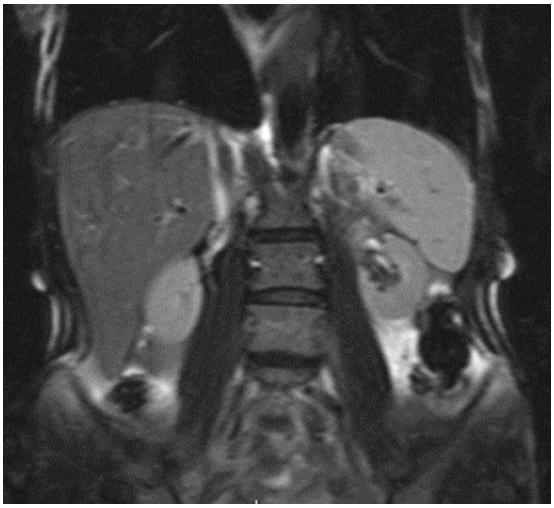
Histoplasmosis capsulatum is a dimorphic fungus that causes respiratory infection via inhalation. In North America, there is a higher incidence reported in the Ohio and Mississippi River Valleys. Disseminated H.capsulatum often occurs in immunosuppressed individuals. Symptoms of disseminated disease include fever, weight loss, and respiratory complaints.2 We are submitting a case of disseminated histoplasmosis to the adrenal glands found incidentally on positron-emission tomography-CT (PET-CT) scan in an elderly patient undergoing evaluation for cervical squamous cell carcinoma.

**Case Description**

A 71-year-old female referred to gynecology-oncology following pap smear indicating HPV-positive squamous cell carcinoma. She reported 6-month history of thick, clear to yellow vaginal discharge and weight loss one year before her presentation. PET-CT performed to evaluate for metastatic disease showed prominent metabolic activity corresponding to bilateral adrenal masses concerning for metastatic disease. Given the highly abnormal findings concerning the spread of cervical cancer, an adrenal gland biopsy was performed, revealing necrotizing granulomatous inflammation and fungal spores. Fungal spores stained strongly positive with Grocott's methenamine silver (GMS) stain - consistent with Histoplasma capsulatum, weakly positive with Periodic acid-Schiff (PAS) stain, acid-fast bacteria (AFB) stain negative, negative for malignancy. Histoplasma antigen in the blood tested positive, confirming chronic disseminated histoplasmosis. Treatment with itraconazole was promptly initiated and initiation of chemoradiation for cervical cancer is pending.

**Imaging**





**Conclusion**

Histoplasmosis capsulatum is a fungal infection primarily affecting the respiratory system and can be fatal if not identified and treated promptly. H. capsulatum has the capability to remain dormant for years and reactivate later when cell-mediated immunity is diminished by immunosuppressive agents or other disease states.3 Disseminated H. capsulatum to the adrenal glands has a unique presentation on PET-CT. Clinicians should include disseminated Histoplasmosis capsulatum in their

differentials for patients presenting with bilateral adrenal masses that exhibit increased fluorodeoxyglucose (FDG) uptake on PET-CT scan.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

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**Abstract 2024 – 81**
**Hashimoto's Associated Fibrillary Glomerulonephritis**

Kevin Dao, MD; Arian Ashrafi, MS IV; Tanya Eftekhari, MD; Aerfan Fallah-tafti, MS IV; Sabitha Eppanapally, MD

**Introduction**

Fibrillary glomerulonephritis is a rare disease glomerular disease with a very nebulous etiology. Due to this, attempts have been made to create associations with this disease to demonstrate a further understanding. In fact, DNAJB9 was one such protein that was noted to be highly prevalent in this disease; however, the causation of how this protein causes fibrillary glomerulonephritis is still unclear. Another key point is that in some rare instances, autoimmune pathologies have been associated with this disease. Here we would like to discuss presentation, diagnosis, and management of a very rare case of Hashimoto's thyroiditis associated with fibrillary glomerulonephritis.

**Case Presentation**

A 58 years-old, Hispanic lady was referred to nephrology clinic for chronic kidney disease in March. Her medical history included diabetes mellitus of 10 years with A1c of 6.1, HTN, hypothyroidism and pulmonary coccidiomycosis. She had been noncompliant with medications for months. Based on her labs the diagnosis of CKD stage G3b/A3, suspected to be secondary to uncontrolled diabetes mellitus versus hypertension, was made.

At another nephrology visit 6-months later a recent increase in creatinine likely due to hypovolemia was noted. Acute kidney injury with hematuria and proteinuria was suspected. Her metformin was held and an evaluation for glomerular diseases was started by obtaining autoimmune work-up. In 2 months, the patient was noted to have developed CKD stage 4. STAT renal biopsy was performed for proteinuria, hematuria, and positive ANCA titers. Her thyroid panel was remarkable for TSH of above 150,000. In one month, she was diagnosed with fibrillary glomerulonephritis based on her biopsy results showing Fibrillary Glomerulonephritis DNAJB9-positive, chronic tubulointerstitial nephropathy, mild arteriosclerosis, and moderate arteriolosclerosis.

The patient was referred to infectious disease to assess the possible risks and benefits of fluconazole while receiving immunosuppression. No clinical or serological evidence of active pulmonary cocci was found. The patient had previously tested positive for Coccidioides and did not complete her course of fluconazole. She was placed on fluconazole 200mg, renally dosed, for prophylaxis and underwent infectious work-up. An abnormal chest X-ray, also led to undergoing a chest CT-scan and a pulmonology referral.

In her pulmonology visit, the patient endorsed dry/productive cough of 3 years, occasional night sweats and shortness of breath on exertion. Chest CT showed a left upper lobe cavitary mass suspected to be secondary to coccidiomycosis or aspergilloma. A bronchoscopy with BAL was performed with no diagnostic evidence of either.

**Discussion**

To put patient on a treatment a discussion between nephrology, infectious disease, and pulmonology was held regarding Rituximab, a CD-20 antibody. Pulmonology recommended holding-off any immunosuppression until ruling out aspergillosis. Infectious disease recommended undergoing vaccinations before initiating immunosuppression as some are contraindicated if the patient is receiving Rituximab.

**Conclusion**

In this presentation, the need for a multi-disciplinary approach for treating such a disease was shown. Keeping in mind that renal function keeps deteriorating unless immunosuppressive therapy is started, it is important to clear the patient of any active/dormant infection as soon as possible to save the organ functionality.

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**Abstract 2024 – 82**
**The Complexity of the TFCC: Ulnar-Sided Wrist Pain in a Collegiate Baseball Player**
Simon Lalehzarian, MS III; Leopoldo Hartmann Manrique, MD; Abigail Moore, ATC; Harnek Singh, MD

**Introduction**

The ulnar side of the wrist has been referred to as a "black box" due to its intricate anatomy, complex differential diagnoses, and varied treatment outcomes. In athletes who routinely perform pronation/supination, radial/ulnar deviation, and axial loading of the forearm and wrist, ulnar-sided wrist pain is common. An anatomic structure that contributes to this confusion is the triangular fibrocartilage complex (TFCC), a load-bearing structure consisting of dorsal and volar radioulnar ligaments, a central articular disc, meniscus homolog, ulnar collateral ligament, extensor carpi ulnaris (ECU) subsheath, and the origin of the ulnolunate and ulnotriquetral ligaments. Its main function is to act as a stabilizer for the ulnar aspect of the wrist. Here, we present a case of a patient with a left wrist TFCC tear associated with an ECU subsheath tear.

**Case Description**

A 22-year-old right-hand dominant male collegiate baseball player with no past medical history presented with left ulnar-sided wrist pain five days after swinging a baseball bat and feeling a painful "pop". He reports sharp, 8/10 pain that improves with rest and worsens with use. Patient states this is the second time this has happened to him. The first time happened years ago while playing baseball and was treated nonoperatively.

On physical examination, mild swelling was noted and patient had tenderness to palpation at the hamate, triquetrum, ECU, and ulnar styloid. Additionally, pain was elicited on the ulnar fovea sign test, ECU synergy test, and ECU subluxation test. X-rays of the left wrist showed minimal ulnar positive variance. An MRI of the left wrist showed ulnar-sided soft tissue edema, moderate tendinosis with partial tear of the ECU, and partial central tearing of the TFCC. At this time, the diagnosis was a left wrist TFCC tear associated with an ECU subsheath tear.

Treatment options such as conservative treatment and surgery were discussed with the patient. He decided to undergo temporary splint/cast immobilization with non-steroidal anti-inflammatory medication (NSAID) for three weeks followed by surgical repair.

**Discussion**

The workup of ulnar-sided wrist pain can be complex, but obtaining a detailed history and performing a thorough physical examination are paramount to making the diagnosis of a TFCC injury. With athletes, physicians should focus on elements of the history that can occur in conjunction with individual sports. Additionally, physicians should utilize special tests such as the ulnar fovea sign test which has a 95% sensitivity for foveal disruptions of the TFCC (Tay et al., 2007). MRI imaging is useful as a preliminary diagnostic tool with arthroscopy being the diagnostic gold standard. Following diagnosis, physicians should discuss conservative therapies such as rest, NSAIDs, and corticosteroid injections as well as include a referral to a hand surgeon for operative management if necessary.

**Conclusion**

Although the ulnar side of the wrist has been referred to as the "black box" of the wrist, a thorough history and physical examination can help make the diagnosis of a TFCC injury. The best outcomes with TFCC injuries will occur with prompt initiation of conservative treatment followed by a surgical consultation in a timely manner.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

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**Abstract 2024 – 83**
**Navigating the Complexity: A Unique Case of Autoimmune Encephalitis**
Sharanya Thiagarajan, MD; Michelangelo Reyes, MD; Ramu Thiagarajan, MD

**Introduction**

The purpose of this case report is to present a detailed analysis of a patient diagnosed with autoimmune encephalitis (AE). The study aims to provide insights into the clinical presentation,

diagnostic methods employed, treatment strategies, and the subsequent outcomes observed in managing this rare and unique neurological disorder.

**Case Description**

The patient, a 32-year-old female, with no past medical history was initially brought to the ED after experiencing 2 witnessed seizures, psychiatric symptoms, including mood disturbances, delusions, and disorganized speech. Patient's mother mentioned that patient is normally pleasant and happy but has been "acting strange" with a blunt affect for the last two weeks since splitting from her boyfriend. Throughout hospital course, patient noted to have significant autonomic instability and generalized rigidity. Initial EEG was normal, but repeat EEG showed diffuse slowing with no epileptiform discharges. CSF showed 5 WBCs and slightly elevated protein and glucose compared to that of the previous LP. Following a thorough investigation and exclusion of other potential causes, a diagnosis of seronegative autoimmune encephalitis was established based on the patient's clinical presentation.

**Methods**

A comprehensive evaluation of the patient's medical history, physical assessments, laboratory investigations, and neuroimaging studies was conducted. Diagnostic procedures included cerebrospinal fluid analysis, assessment of serum antibody levels, electroencephalogram recordings, and brain magnetic resonance imaging.

**Discussion**

Based on patient's clinical manifestations of atypical focal/generalized seizures presenting as status epilepticus initially, significant cognitive and language impairment and psychosis throughout hospital stay, a diagnosis of AE is highly warranted. CT, repeat MRI, Figure 1, and repeat EEG findings also were suspicious of AE. At first, LP wasn't considered as patient presented with cerebral edema and bedside fundus exam revealed papilledema and was given prophylactic IV acyclovir and IV antibiotics.

Malignancy workup including digital mammography, pelvic ultrasound, CT chest, abdomen & pelvis were also ordered to rule out paraneoplastic etiology of AE. Workup was negative. LP was performed three days later, and CSF was negative for any bacterial etiology, Coccidiomycosis, West Nile Virus, and AE antibody panel.

Despite negative AE antibody panel, patient was treated based on meeting the Gauss criteria for possible AE, Figure 2. This criterion further classifies seronegative AE into two subtypes: definite autoimmune limbic encephalitis (LE) and autoantibody-negative but probable AE (ANPRA). LE can still be diagnosed even without a positive antibody, requiring bilateral T2-increased signal changes limited to the mesiotemporal lobes on brain MRI, a highly specific finding.

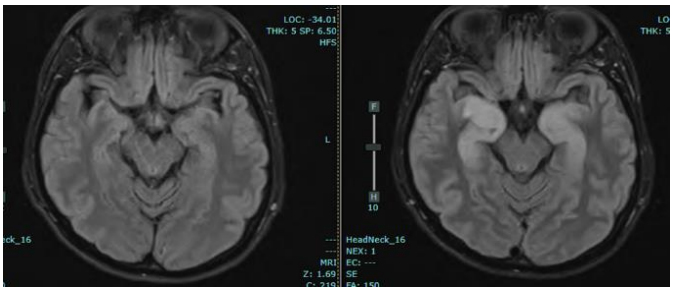


**Figure 1 & 2:** Reproduced from: Graus F, Titulaer MJ, Balu R, et al. A clinical approach to diagnosis of autoimmune encephalitis. Lancet Neurol 2016; 15:391. Table used with the permission of Elsevier Inc. All rights reserved.

**Conclusion**

Following the initiation of treatment, the patient exhibited gradual improvement in psychiatric symptoms, resolution of seizures, and a return to baseline neurological functioning. vThis case report highlights the significance of early recognition, prompt diagnosis, and aggressive immunotherapy in effectively managing ANPRA.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com.*

**Abstract 2024 – 84**

**The Silent Intruder Unveiled: The Elusive Diagnosis of Tuberculosis Meningitis**

Sharanya Thiagarajan MD, Michelangelo P. Reyes MD, Ramu Thiagarajan MD

**Introduction**

This case report aims to present a challenging diagnostic journey encountered in a 79-year-old Tagalog-speaking female with tuberculosis meningitis. This study aims to shed light on the difficulties faced during the diagnostic process. Due to the nature of her initial symptoms, a high index of suspicion for meningitis was maintained throughout the diagnostic process.

**Case Description**

The patient arrived exhibiting signs of an altered mental state and fever, which suggested a potential case of meningitis. On arrival, the patient had a blood pressure of 99/58 and was tachycardic with a heart rate of 115, a respiratory rate of 24, and a fever of 102.8 F. The patient was saturating 97% on room air. Labs were significant for potassium of 3.1, bicarbonate of 18, lactic acid 4.5, and a Pro-Cal of 1.38. Chest x-ray showed moderate vascular congestion. CT of the abdomen pelvis showed significant thickening of the rectal wall. A sepsis alert was initiated, and the patient was given 30 cc/kg of fluids and started on IV Zosyn in the emergency department. The patient was admitted to telemetry for severe sepsis, and at that time, it was secondary to an unknown etiology. Blood cultures and urine cultures were taken, and urinalysis was negative.

**Discussion**

Considering the patient's age and wide range of possible diagnoses, a comprehensive exam, labs, lumbar picture with CSF analysis, and imaging were conducted. The Cerebrospinal Fluid (CSF) analysis unveiled a high protein level, lymphocytic pleocytosis, and reduced glucose levels. These factors align with Tuberculosis (TB) meningitis symptoms, a conclusion further supported by the patient's positive TB QuantiFERON result. All other CSF studies, including HSV, cocci, and West Nile, were negative. The patient had no respiratory symptoms to suggest pulmonary TB, and her chest X-ray was negative for TB. The patient was started on RIPE therapy, steroids, and B6. After beginning treatment, the patient's symptoms began to improve.

**Conclusion**

Diagnosing tuberculosis meningitis can be particularly challenging, especially in elderly patients with nonspecific clinical manifestations and a wide range of differentials to consider. This case report highlights the importance of maintaining a high index of suspicion in the face of diagnostic uncertainty. It emphasizes the significance of thorough evaluation, including examination, CSF analysis, and molecular testing, in confirming the diagnosis. Timely identification of tuberculosis meningitis is crucial for initiating appropriate treatment promptly, thus improving patient outcomes.

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**Abstract 2024 – 85**

**The Effect of Beta Blocker Therapy in Methamphetamine Users in Cardiovascular Conditions**

Judy Kim, OMS III; Anna Bjarvin OMS III; Stone Holtzman, OMS III; Sydney Cross, OMS III; Janpreet Bhandohal, MD; Baldeep Mann, MD; Fowrooz Joolhar, MD; Aslan GhandFroush, DO

**Introduction**

Cardiovascular complications have been implicated as the second leading cause of death among methamphetamine users, the primary cause being overdose. Methamphetamine has been reported to cause a variety of pathophysiologic changes to heart tissue. Due to its significant cardiac morbidity and mortality and limited available literature focusing on the association between methamphetamine and hypertension, this relationship needs to be further explored.

As methamphetamine is a prevalent drug of abuse in Kern County of Bakersfield, California, patients at Kern Medical Center provide an adequate model for the effects of methamphetamine on hypertension. We are investigating the effects of beta blocker therapy in patients with heart failure and methamphetamine use and the changes in blood pressure over time while comparing the use versus nonuse of beta blockers amongst methamphetamine users.

**Purpose of Study**

The purpose of this study is to investigate the changes in blood pressure over time, for patients presenting to the ER with uncontrolled hypertension, who tested positive for methamphetamine, versus controls who did not. Based on the differences we see regarding these changes and the response to common antihypertensive therapies such as beta blockers, our goal is to determine recommendations of antihypertensive medications for methamphetamine users in this setting.

**Methods**

Our study's subject selection was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to identify all patients who met our study's inclusion criteria. Initially, we requested records for patients with ICD codes for Methamphetamine and/or Stimulant Abuse, and began with 34356 total, and 15401 unique MRNs. Of the cases collected, we evaluated 1098 MRNs, excluded MRNs routing to duplicate medical records, and included MRNs with at least one recorded methamphetamine positive Urine Toxicology for a total of 500 cases. Data collection is ongoing, and cases will be further evaluated by treatment modalities and outcomes and then compared with controls.

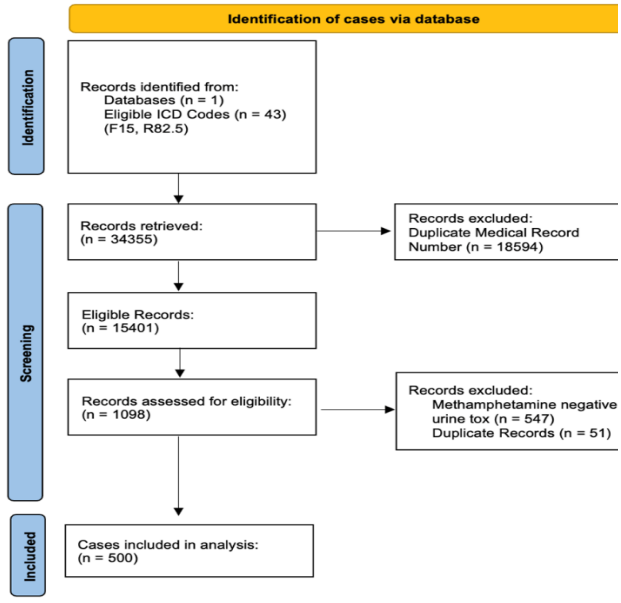


**Figure 1. PRISMA flow diagram depicting our study's subject selection.**

**Summary of Results**

*This section is in progress as data collection is ongoing. We do not include this because it is a descriptive abstract.

**Discussion**

In this study investigating the cardiovascular response to beta blocker therapy in patients testing positive for amphetamines, preliminary findings suggest notable trends in cardiovascular parameters. While comprehensive analysis is ongoing, initial observations indicate potential alterations in blood pressure and other relevant physiological markers following beta blocker administration in this unique patient population. These preliminary results underscore the need for further investigation into the cardiovascular effects of beta blockers in individuals with concurrent amphetamine use, highlighting the complexity of managing cardiovascular health in this cohort.

**Conclusions**

This section is in progress as data collection is ongoing. This section should not be included in the abstract because we are making a "Descriptive Abstract", which is prior to data collection.

***For a list of references cited in this abstract, please contact*** researchforum@kernmedical.com**.**

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**Abstract 2024 – 86**

**A Case of Conversion Disorder Secondary to Arnold-Chiari Malformation in an Adult**

Kajal Patel, MS IV; Steven Beebe, MD; Howard Cheung, MD; Matthew Louie, MD

**Introduction**

Arnold-Chiari malformation type 1 is a rare brain structural abnormality linked to genetic coded proteins called chromodomains which regulate gene transcription during development. Conversion disorder is a rare psychiatric condition causing alterations in sensory and voluntary motor function, where clinical findings do not match objective workup. Its incidence depends on geography, gender and socioeconomic status. We report a unique case

of a patient diagnosed with conversion disorder after surgical intervention for Arnold-Chiari malformation.

**Case Description**

This case describes a 35-year-old African American male with minimal past medical history who presented to the ED after a suicide attempt via overdose. At age 20, the patient was evaluated by a neurologist after developing sporadic involuntary movements. The patient reported no substance use.

The patient's MRI showed Arnold-Chiari malformation and tonsillar herniation down to his C2 vertebrae. Neurosurgery performed a suboccipital craniectomy to correct the malformation after which the patient had resolution of his symptoms. Two months after the surgery, the patient's symptoms relapsed and increased in severity of muscle cramping and body contortions requiring assistance. The patient underwent more than five neurological evaluations. Repeat imaging showed resolution of the malformation. All labs continue to be unremarkable. A movement specialist determined that the patient's movements were not consistent with any known neurological condition.

The patient was then referred to Psychiatry where differential diagnoses included Tourette syndrome, schizophrenia, schizoaffective disorder, and conversion disorder. He was formally diagnosed with conversion disorder and underwent multiple medication trials of aripiprazole, baclofen, lorazepam, clonidine, and clonazepam. The patient has also been diagnosed with depression and anxiety secondary to his health status. The patient is also partaking in biweekly psychotherapy. During the patient's most recent hospitalization, a more complete family history revealed seizure history in a half-brother and a history of tic disorder in the patient's mother. The patient was discharged on duloxetine 60mg PO QAM and 30mg PO QHS and gabapentin 300mg PO TID and instructed to follow up with his psychotherapist.

**Discussion**

Despite multiple medical evaluations, this patient's symptoms have persisted. The patient's condition led to social isolation, divorce, and limited his ability to work. A biweekly psychotherapy regimen did not provide this patient with significant improvement in his symptoms. This raises concerns for alternative causes for this patient's involuntary motor movements including genetic and molecular. Consideration also needs to be given to the role his Arnold-Chiari malformation surgery may also have caused permanent motor function impairment. This change in brain structure may also explain his psychiatric conditions. Also, the late diagnosis of Arnold-Chiari malformation may have caused permanent cerebellar damage that uncovered itself via the clinical presentation of abnormal psychomotor movements despite the surgical correction.

**Conclusion**

This patient has a rare movement disorder presumed to be caused by conversion disorder after ruling out known neurological conditions. This patient needs to undergo genetic testing. Also, further research needs to be completed on movement disorders to create a better understanding of rare neurological conditions and the long-term psychiatric consequences of late diagnosis and treatment of Arnold-Chiari malformation.

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**Abstract 2024 – 87**
**A Case of Pericallosal Lipoma Presenting as Epilepsy**
Sharanya Thiagarajan, MD; Ramu Thiagarajan, MD

**Introduction**

Pericallosal lipomas are rare congenital malformations that are usually formed during the embryonic stage and further categorized as tubulonodular, curvilinear or both subtypes. Most are asymptomatic but some can present with headache, seizures, and/or dementia. Most pericallosal lipomas are discovered incidentally upon workup for other neurological conditions. This report illustrates the clinical and radiological findings of Tubulonodular Pericallosal lipoma in a patient which was revealed incidentally during evaluation for recurrent seizures.

**Case Description**

A 58-year-old male with past medical history significant for seizure disorder and hyperlipidemia presented to the outpatient clinic for establishing care in management of seizures. Patient's seizures were weekly and described as complex partial

seizures during which he turns his head to one side and stares off in space without responding with right upper extremity stiffening and jerking for one to two minutes. His seizures were followed by a postictal confusion and disorientation for the duration of 30 minutes. Family history is negative for epilepsy. Vital signs were normal and general physical and neurological exams were normal. As the patient continued to have breakthrough seizures despite being on Levetiracetam and Carbamazepine, detailed workup was done with MRI brain with/without contrast and EEG.

Upon reviewing results, MRI showed tubulonodular pericallosal lipoma extending into the bilateral lateral ventricular choroid plexuses and with associated hypoplasia/dysplasia of splenium of corpus callosum. Patient was slowly weaned off of Carbamazepine and started on Lacosamide with slow titration as tolerated. His seizures continued to improve but still occurred every few weeks until the addition of Cenobomate. Neurosurgery was consulted and did not recommend any surgical interventions and advised to continue with current seizure management.

**Discussion**

The seizures secondary to Pericallosal lipoma can be medically refractory to standard antiepileptic medication therapy. Patient was started on Cenobamate with noticeable improvement with seizure freedom, showing that aggressive treatment using anti-epileptic drugs with different mechanisms of action. Patient did not exhibit any other supplemental symptoms such as headaches, behavioral problems, or cognitive impairment but could be seen in other cases. Treatment for pericallosal lipomas still remains symptomatic management with no surgical interventions.

**Conclusion**

In conclusion, Pericallosal lipoma incidence continues to increase with a wide range of symptoms. The patient in this report presented with complex partial seizures that could be secondary to pericallosal lipoma. Pericallosal lipoma should not be misunderstood as a rare finding and rather a condition that is on the uprise. Practitioners should be aware of the several types and manifestations and should be educated on its medical management.

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**Abstract 2024 – 88**
**Lemierre'S Syndrome in a Pediatric Patient Presenting with Altered Mental Status: A Case Report**

Bianca Arechiga, DO; Larissa Morsky, MD

**Introduction**

Lemierre's Syndrome, a rare and potentially life-threatening condition, is characterized by septic thrombophlebitis of the internal jugular vein following a primary oropharyngeal infection.

**Case Description**

This case report details the presentation and management of Lemierre's Syndrome in a pediatric patient initially presenting with altered mental status. The patient, a previously healthy 7-year-old, was brought to the emergency department with multiple symptoms including lethargy and severe proptosis of the eyes that initially raised suspicion for non-accidental trauma versus meningitis. A thorough investigation revealed a complex clinical picture that led to the diagnosis of Lemierre's Syndrome. Upon further examination, the patient's medical history unveiled a recent upper respiratory tract infection, suggesting a potential oropharyngeal source for what was ultimately diagnosed as Lemierre's Syndrome. Imaging studies, including computed tomography (CT) scans, demonstrated septic thrombophlebitis within the internal jugular vein, otomastoiditis, meningitis, and pneumocephalus. Prompt initiation of broad-spectrum antibiotics and supportive care were crucial components of the treatment plan. The patient was transferred to a pediatric facility for higher level of care.

**Discussion**

This case report highlights the importance of considering Lemierre's Syndrome in the differential diagnosis of pediatric patients presenting with altered mental status and atypical manifestations of sepsis. The initial suspicion of child abuse shows the challenges faced by healthcare providers in recognizing rare and potentially life-threatening conditions, especially when presented with unclear symptoms and history.

Moreover, the case emphasizes the significance of a comprehensive medical history, thorough physical exam, and judicious use of diagnostic imaging in breaking down complex clinical presentations. Awareness of Lemierre's Syndrome in pediatric populations is crucial for timely diagnosis and initiation of appropriate interventions, preventing potential complications and ensuring optimal patient outcomes.

**Conclusion**

In conclusion, this case report sheds light on the intricate diagnostic journey of a pediatric patient with Lemierre's Syndrome, highlighting the importance of maintaining a broad differential diagnosis in the face of perplexing clinical presentations, ultimately leading to life-saving interventions.

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**Abstract 2024 – 89**
**Eccentric Vertebral Thrombus and the Role of Anticoagulation**

Elias Inga Jaco, MD; Mia Yasonova, MD; Stephanie Zapata, MD; Igor Garcia-Pacheco, MD

**Introduction**

Vertebral artery atherothrombosis can be caused primarily by atherosclerosis. Vertebral artery occlusion can also result from chronic pathologies such as fibromuscular dysplasia, Takayasu arteritis, osteophyte compression dissections, and aneurysms. Currently the most common accepted treatment for vertebral artery atherothrombosis is surgical therapy which shows successful results.

**Case Description**

This is an 80-year-old man with PMH of migraines, TBI, hypertension, MIs in his 80s. At baseline, patient is independent for activities of daily living and is able to drive himself. Patient presented to the ED via EMS after he was found confused at home, associated with slurred speech, expressing nonsensical words, and right-sided weakness, leading to inability to stand up, requiring patient to be transported on a gurney. In the ED, patient had NIHSS of 7 which included right leg weakness, ataxia, and aphasia. Patient was noted to be hypertensive, having mild tachycardia and tachypnea.
CT head without contrast showed old infarction in the right cerebral hemisphere. CT angiogram of head and neck showed bilateral vertebral arteries opacification with no occlusion. Right vertebral artery was dominant with hypoplastic left vertebral arteries. Eccentric calcified plaque and thrombus in the proximal area of the vertebrobasilar junction causing severe stenosis of the proximal basilar artery. MRI suggested small acute nonhemorrhagic infarction of the left parietal lobe region, and small old cerebellar infarctions.

In this case, given acute nonhemorrhagic infarction of the left parietal lobe, it was suggested that emboli from vertebral trace was the specific culprit. Given the above findings, patient was started on heparin drip and close monitoring. Patient evolved favorably in the following days. Patient was able to return to baseline, performing ADLs without complications next day. Patient was scheduled to have CT angiogram of head and neck and continue with apixaban for the next 8 weeks.

**Discussion & Conclusion**

Vertebral artery atherothrombosis causes posterior cerebral circulation pathologies, in this patient it is believed that left parietal lobe infarction was caused by emboli stemming from the vertebral thrombosis. In this patient, atherothrombosis is eccentric in nature, with episodes of emboli to the left parietal region. Thrombosis of vertebral arteries are life-threatening occlusions as they can cause emboli to the basilar artery and cause devastating effects, it can also reocclude causing stroke events.

At present, the more accepted treatment for vertebral artery atherothrombosis is through surgical management. In this paper , we would like to discuss the importance of anticoagulation treatment as there are no prospective trials that may able to suggest if antiplatelets alone are better to long-term or short-term use of anticoagulation in the treatment of vertebral artery after thrombosis. Narma Et al, presents a successful treatment of basilar artery requiring thrombosis with long-term anticoagulation. In this patient, we suggest long-term anticoagulation and a CT angiogram of the head and neck as a way of measuring evolution of eccentric thrombosis.

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**Abstract 2024 – 90**

**Case Series of Thyrotoxicosis: Unique Presentations and Challenges of Thyroid Storm Management**

Elias Inga Jaco, MD; Sangeeta Chandramahanti, MD, FACE; Sukhmani Singh, MD; Matthew Clarke, MD; Ralph Garcia-Pacheco, MD; MD; Fowrooz Joolhar MD; Marah Sukkar, MD; Ratha Kulasingam, MD

**Introduction**

Hyperthyroidism is defined as inappropriately high production and release of thyroid hormones. The development of symptoms is called thyrotoxicosis while thyroid storm (thyroid crisis) is the acute and life-threatening state of exacerbated hyperthyroidism. The presentation of thyrotoxicosis and thyroid storm is wide and the resultant complications are unpredictable. The mortality of thyroid storm is estimated at 8 to 25% despite early recognition and appropriate treatment. In this three-patient case series, presentations such as cardiogenic shock during thyroid storm, as well as stroke and cardiac arrest as a result of thyroid storm are discussed.

**Case #1**

A 37-year-old Hispanic male with no known medical history presented to the hospital with shortness of breath and abdominal pain. During acute presentation, patient was found to be in thyroid storm manifested by thyroid stimulating hormone (TSH) < 0.008 mlU/mL (normal 0.554 - 4.780 mlU/mL ), free thyroxine (T4) > 7.6 ng/dL (normal 0.9-1.8 ng/dL ) and a Burch-Wartofsky point scale (BWPS) of 100. Incidentally, left ventricular ejection fraction was found to be < 10% making treatment for heart failure and thyroid storm antagonistic to one another. Patient was placed on mechanical ventilation for acute respiratory failure secondary to acute cardiogenic shock exacerbated by thyroid storm.

**Case #2**

A 31-year-old Korean male with no known medical history presented with hoarseness, neck mass, and left sided hemiplegia. CT brain without contrast showed right middle cerebral occlusion. Patient underwent thrombectomy which was complicated by post thrombectomy bleeding and development of new right anterior cerebral thrombosis. Thyroid function testing during admission showed TSH <0.008 mlU/mL and free T4 8.5 ng/dL and a BWPS of 75. Coagulopathy was likely a result of thyroid storm. The hypercoagulable state resulted in repeated ischemic strokes, making treatment challenging for both medicine and neurosurgery.

**Case #3**

A 19-year-old female with recent diagnosis of Grave's disease who developed cardiac arrest and achieved ROSC. Presented to the hospital with tachycardia, agranulocytosis and acute respiratory infection. Thyroid storm was suspected by BWS score of 75 and TSH level of < 0.017 mlU/mL and free T4 of 4 ng/dL. Given that the patient presented with agranulocytosis on thyroid storm, traditional therapy for Grave's disease was held and Lithium was used.

**Discussion & Conclusion**

Thyroid storm is a medical emergency with multisystem involvement that carries a high mortality rate. It is important to consider diagnosis of severe thyrotoxicosis in the young population as atypical presentations such as cardiogenic shock, stroke, and even cardiac arrest are possible with no prior history of hyperthyroidism. In this case series, we discuss cardiovascular complications of thyroid storm and treatment challenges in atypical cases.

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**Abstract 2024 – 91**

**Skull Lytic Lesions**

Elias Inga Jaco, MD; Mia Yasonova, MD; Stephanie Zapata, MD; Igor Garcia-Pacheco; MD

**Introduction**

Coccidioides, and endemic fungus in Southwestern United States, causes coccidiomycosis infection. Coccidiomycosis ranges from asymptomatic disease to disseminated devastating infections. The most common route of infection of coccidioidal disease is inhalation causing respiratory symptoms. Although direct inoculation is rare, it is possible.

In terms of coccidiomycosis infection of bone, data suggests the most common site of infection is the spine followed by the foot. In this paper, we present a rare Coccidiomycosis infection of the skull bone.

**Case Description**

This is a 29-year-old woman with past medical history of epilepsy, TIA, asthma, hypertension, pituitary tumor s/p resection, hypothyroidism, anxiety and schizoaffective disorder. Patient reported a seizure episode about 2 months prior to presentation. Seizure led to a ground-level fall where patient fell to the ground and hit her head. Patient was seen at outside hospital for headaches that started after ground-level fall. CT head showed concerns of multiple lytic lesions. At this point, malignancy was the primary differential diagnosis which led to the SPEP and UPEP and head MRI work up. SPEP and UPEP were not contributory to malignancy differentials. In-house CT brain without contrast showed destructive lesions involving the calvarium. MRI of brain with and without contrast showed multifocal calvarium osseous lesions, the largest lesion in the left lateral frontal lobe measuring 3.4 cm, as well as pachymeningeal enhancement. Given that coccidiomycosis infection is endemic in the area, patient also underwent Coccidioides serology work which showed reactive IgM antibody, reactive IgG antibody and 1:256 titer of CF antibody.

Patient underwent CT-guided skull lytic lesion biopsy which rendered diffuse granulomatous inflammation with coccidiomycosis and focal necrosis. Biopsy was negative for any malignancy. Patient was started on fluconazole 800 mg, oral, on a daily basis. Upon follow-up, patient reports no headaches. Up until this point, patient denies any visual disturbances, syncopal or presyncopal episodes, nausea vomiting, cough, shortness of breath, fevers, rigors, and diaphoresis.

**Discussion**

During patient interview and review of past medical records, there is no obvious indication of a previous pulmonary infection. Given that patient reported headache after ground-level fall after a seizure, this patient's presentation presumably points to a local inoculation with coccidiodes resulting in formation of an osteolytic lytic coccidiomycosis infection of the skull. However, an underlying dormant infection progressing to an eventual reactivation of coccidiomycosis infection cannot be ruled out. Coccidiomycosis infection is known to cause lytic lesions when it causes bone infection. In an endemic area such as in this patient's, coccidiomycosis should be thought as one of the highest differential diagnoses followed by a Coccidioides blood work for serology.

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**Abstract 2024 – 92**
**Intramuscular Abscess and Osteomyelitis Due to Salmonella in a Young Male**
Larissa Morsky, MD; Daniel Quesada, MD

**Introduction**

Salmonella osteomyelitis and intramuscular abscesses are rare entities almost exclusively diagnosed in specific populations such as those with sickle cell disease or immunocompromised patients. (2)

**Case Description**

This is a case of a 24-year-old male with no known past medical history who presented to the emergency department with left leg pain and swelling. His symptoms began approximately 3 months prior however they had acutely worsened over the past 2 weeks. He had been evaluated by his primary care physician when he initially experienced the pain and x-rays of the left lower extremity showed no acute abnormalities. There was no history of trauma or procedures to that extremity. Pain was localized to the left thigh and radiated distally. He was unable to bear weight secondary to the pain. He also endorsed a history of fevers and unintentional 30lb weight loss.

Physical exam was significant for tenderness and swelling of the left anterior thigh with no skin erythema or lesions. He was tachycardic and had a WBC count of 23.4. CT scan of the left lower extremity with contrast demonstrated a large multilocular intramuscular abscess in the distal thigh with cloaca and intraosseous abscess involving the distal femur. Fine needle aspiration of the abscess was performed and fluid cultures grew salmonella species. Blood cultures were negative. Patient was treated with 2g ceftriaxone QD for 6 weeks with resolution.

During his hospital stay the patient was diagnosed with type 2 diabetes mellitus and he was discharged home with metformin and Ozempic.

**Discussion**

Salmonella infection can cause four predominant clinical syndromes: enteric fever, acute gastroenteritis, bacteremia with or without metastatic infection, and the asymptomatic carrier state.(4) Salmonella osteomyelitis is typically an infection of the diaphysis of the long bones. The most common bones involved are the femur and the humerus.(2)

Pyomyositis, an intramuscular abscess of the skeletal muscle, usually presents with fever and muscle pain. (1) It must be confirmed by ultrasound, CT scan or MRI. Treatment includes antibiotics along with incision and drainage. (5)

As in our case, these infections of the muscle and bone may not present with obvious local signs of infection such as erythema or warmth. Along with other immunocompromised states, diabetes mellitus is a known risk factor for salmonella infections (5)

During his initial evaluation the patient did not have any medical comorbidities that he was aware of, however he was found to have an HbA1c of 10.1. His fluid culture from the abscess grew salmonella species #2 that was sensitive to ampicillin, ceftriaxone, ciprofloxacin and trimethoprim/sulfamethoxazole. It is important to note that increasing antimicrobial resistance to fluoroquinolones and extended spectrum cephalosporins among clinical Salmonella isolates is becoming more prevalent, therefore appropriate antibiotics must be selected based on fluid cultures. (1)

**Conclusion**

Prompt diagnosis and early treatment are imperative in reducing morbidity and mortality of osteomyelitis and pyomyositis, therefore it is essential to consider salmonella infections in immunocompromised patients. It is also important to remember that diabetes mellitus is a risk factor for these types of infections and to have a high index of suspicion in this patient population.

***For a list of references cited in this abstract, please contact** researchforum@kernmedical.com**.**

**Abstract 2024 – 93**

**Scapular Winging in a Newborn: A Case Report**

Sarah Thomas, OMS III; Rachel Meach, OMS III; Vy Nguyen, OMS III; Thiagarajan Nandhagopal, MD

**Introduction**

Scapular winging is a rare condition, specifically in a newborn, that can lead to functional and structural impairments. The cause can be due to many things including birth injury, genetic abnormality, perinatal trauma, etc. There are two types of scapular winging including primary and secondary [1]. Primary may be caused due to nerve palsies, or other soft tissue abnormalities or bone/osseous structure deformities. Secondary may be attributed to glenohumeral joint dysfunction among other causes [1]. Scapular dysfunction can cause difficulties with elevating the arm and using specified arm to lift objects [2].

**Case Description**

Patient was a 39-week + 3-day gestational age neonate born with the left scapula more prominent posteriorly compared to the right noted on newborn exam. Patient was able to perform passive abduction of arm without decreased range of motion or signs of pain. On passive abduction, the left scapula prominence was profound and necessitated x-ray. Imaging found no evidence of fracture and there was not proper optimization of shoulder to assess for dislocation. When compared to the right scapula x-ray, the left was shown to lie substantially more lateral with the arm in abduction. The patient had no other abnormal physical exam findings. Differentials included scapular winging vs skeletal abnormality. Patient was discharged with plan to follow up with primary pediatrician and pediatric orthopedic specialist.

**Discussion**

Scapular winging is a functional impairment that can have long term consequences in a pediatric patient lasting into their adult years. The most common causes include long thoracic nerve injury causing medial scapular winging due to serratus anterior muscle damage; and spinal accessory nerve injury causing dysfunction of the trapezius muscle and further lateral winging of the scapula [2].

Most cases reported in the literature are of adults and not newborns, which makes this case especially interesting. Common cases of scapular winging are presented with scapular nerve palsy which can be secondary to trauma, exertion, locally invasive procedures, infection, exposure to cold, sleeping position, and other unknown causes [4]. Most of these would not be the case in a newborn. Birth trauma is suspected; however, delivery records were unremarkable and birth weight was in the 71st percentile. Consequently, more research in scapular winging especially in the pediatric population is necessary due to its rare presentation that may affect the mobility and functionality of the patient for the remainder of his life. It is important to educate parents of young newborns with the condition and underscore the importance of follow up with a specialist.

**Conclusion**

Scapular winging is rare in newborns which prompts the necessity of a full careful newborn physical exam and consideration for causes as to why scapular dysfunction may occur. It is important to follow up with diagnosis and treatment and continue research in this field.

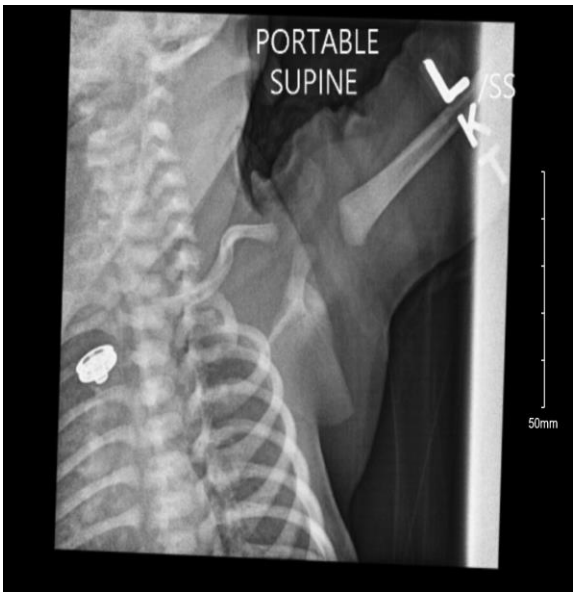



**Fig 1: Left scapula in abduction**

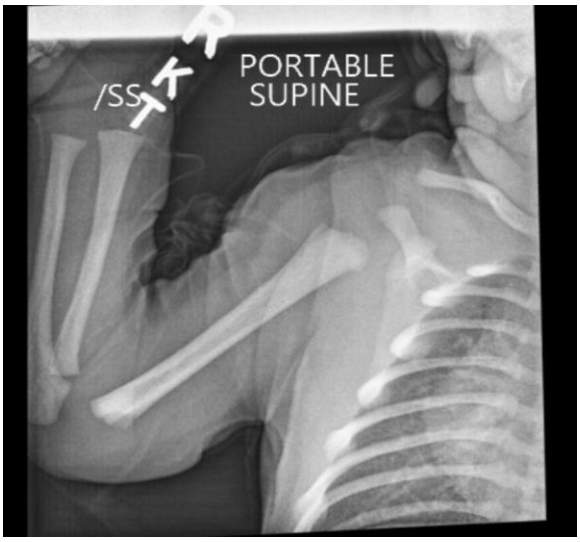



**Fig 2: Right scapula in abduction**

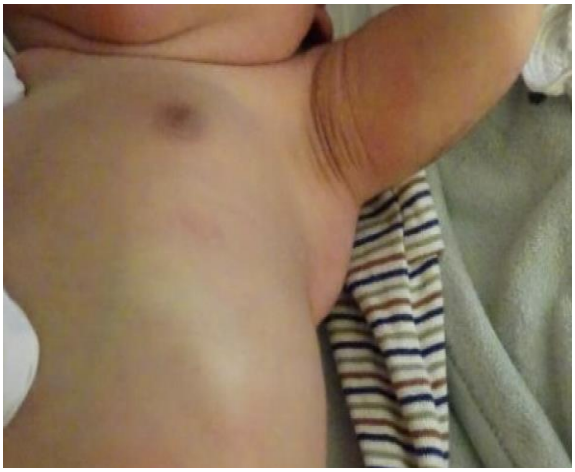
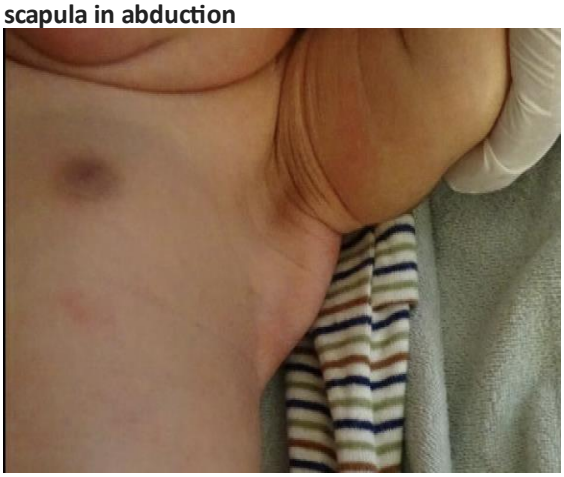


**Fig 3 (above) and Fig 4 (below): Anterior view of left scapula in abduction**



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**Abstract 2024 – 94**

**Atypical Presentation of Functional Neurological Disorder: A Case Report**

Vy Nguyen, OMS III; Judy Kim, OMS III; Harnek Singh, MD

**Introduction**

Functional neurological disorder (FND) formerly known as conversion disorder, represents neural network abnormalities rather than structural dysfunctions that can present with symptoms such as weakness of the extremities, difficulty walking, tremors, and seizures (1). Patients with FND experience genuine disability and distress that frequently necessitate neurology visits, the second most common after headaches (2).

**Case Description**

A 51-year-old female with a past medical history of migraines, uncontrolled hypertension, hyperlipidemia, type 2 diabetes mellitus, presented with muscle weakness in all extremities, altered mental status, and acute binocular vision loss. Per husband, the last normal was at 10PM the night prior with ongoing headache for several weeks, right leg weakness for the past week, and diarrhea for the past two days. The patient woke up at 1AM complaining of "not feeling right" with measured hypoglycemia and reported blurry vision. By the time the patient arrived at the ED, she had a complete loss of muscle strength in all extremities and altered mental status.

In the ED, vitals were remarkable for hypertension and hyperglycemia. The patient had an unremarkable extensive stroke workup, was admitted for possible meningitis, and started on an empiric antibiotic regimen with steroids. On hospital day two, the patient recovered almost completely to baseline. Image-guided lumbar puncture on day two of antibiotic treatment was unremarkable, thus changing the diagnosis to possible FND versus complex migraine. The patient was stable and was subsequently discharged with outpatient follow-up.

**Discussion**

Initially, the patient's presentation seemed to align with the criteria for complex or retinal migraine, which are rarer subtypes of migraine (3). However, further evaluation revealed bilateral blindness and absence of aura making a definitive diagnosis of migraine unattainable (4, 5). Considering the patient's psychiatric history of major depressive disorder, compounded by comorbidities such as hypertension and diabetes, and exacerbated by anxiety stemming from the death of their daughter, the clinical and historical context supports a diagnosis of Functional Neurological Disorder (FND) (6).

FND is characterized by motor, sensory, or cognitive changes resulting in significant distress or impairment. While functional seizures and movement disorders are the most common manifestations, symptoms can also include visual and speech disturbances (6). The unique presentation of bilateral binocular vision loss observed in our patient illustrates a novel manifestation of FND and even renders the possible connection between FND and structural dysfunctions. Although FND is often associated with psychiatric conditions, research indicates that it can also be triggered by structural illnesses or injuries, leading to new nociceptive or sensory experiences (6, 7, 8). Given the complexity of this disorder, a multidisciplinary care team comprising neurologists, psychiatrists, and primary care physicians is essential to offer a clear explanation and an appropriate treatment plan for our patients. Ultimately, we hope to discourage the stigma associated with FND and enhance the current understanding of the disorder so that our patients can receive the adequate care and management they deserve.

**Conclusion**

Functional neurological disorder can have a diverse presentation in regards to motor and sensory changes that require attention and adequate care from a multidisciplinary team. Prior to making this diagnosis, a full diagnostic work up needs to be ascertained and must be unremarkable for findings which can easily explain the symptoms.

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