

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #1

Category: Research

School: Central Michigan University

Clerkship Director: Nicolas Haddad, MD, FACP

Presenter: Averie Dickinson

Additional Authors: Bradley Miller; Ahmed Ftouni; Anastasia Bury; Lauren Gilbert; Neli P. Ragina, PhD, MSc; Ariel Cascio, PhD

Effects of Cannabis and Its Derivatives on Sleep: A Systematic Review

Objective/Background: The relationship between sleep and the use of cannabis and its derivatives has received increased attention in recent years, particularly following various legislative legalization, and decriminalization of cannabis across the United States and Canada since 2012. The purpose of this systematic review is to investigate the effect of cannabis and its derivatives on sleep and to determine the nature of its impact, should one exist. Research to date involving cannabis and sleep has often used a variety of measurements for determining sleep quality and has also focused on distinct populations, obscuring attempts to generalize conclusions. This review compares results from diverse study populations to document broader conclusions involving all adult populations in the United States and Canada, excluding people experiencing cannabis withdrawal.

Methods: A systematic review identified 195 English language randomized-control and controlled-clinical trial studies, published in the USA or Canada on relevant topics dating January 01, 2012 - October 09, 2020 across the following five databases: PubMed, Cochrane, CINAHL, ProQuest, and TRIP. Their methods and results were thoroughly reviewed, and 129 articles were excluded based on lack of data on sleep outcomes, lack of data on cannabis use, and type of study. 21 articles fit the inclusion criteria and were included in this review.

Results: 14 articles (74%) showed a positive effect, 3 articles (16%) showed no overall effect, and 2 articles (10%) showed a negative effect of cannabis and/ or derivatives on sleep quality. More studies showed a positive effect of cannabis and its derivatives on overall sleep outcomes than a negative effect or no effect. Sleep latency, total sleep time, sleep duration, insomnia scores, overall sleep quality, and sleep architecture were the outcomes that showed improvements following cannabis use across numerous studies. There were differences based on presence and type of chronic illness, and acute use versus chronic use.

Conclusion: Although current published evidence supports the plausibility of a positive effect of acute cannabis and cannabinoids on sleep outcomes, further research into cannabis' effect on sleep is warranted. Future studies would benefit from larger population sizes and broader focuses that allow for more generalizable conclusions.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #2

Category: Research

School: Central Michigan University

Clerkship Director: Nicolas Haddad, MD, FACP

Presenter: Emily Reitzel

Additional Authors: Jyotsna Pandey, MD, PhD

Prevalence of Toenail Onychomycosis and Onychocryptosis Among Rural Older Adults with Diabetes Mellitus

Background: Over 25% of individuals aged 65 years or older have diabetes mellitus (DM) in the United States. Previous studies suggest that toenail onychomycosis and onychocryptosis affects approximately one-third of DM patients. Both conditions have been associated with an increased risk of developing diabetic foot ulcers (DFU). Studies have shown that rural older adults with DFU are at an increased risk of undergoing amputation than their urban counterparts.

Objective: To determine the prevalence of onychomycosis and onychocryptosis in older adults with diagnosed DM living in rural, underserved counties in central Michigan.

Methods: 194 participants self-enrolled in the Healthy Aging Initiative of the Central Michigan University College of Medicine. Recruitment criterion included: age 60 years or older, independently living in their own household, reasonably mobile and cognitively intact. Presence of comorbidities were recorded for all participants. A detailed foot exam was done and the presence of toenail deformities such as long, thick, or ingrown toenails were recorded. We correlated the presence of DM and toenail abnormalities using Microsoft Excel Pivot Tables, on data collected during home visits in 2019 and 2020.

Results: Fifteen patients reported a diagnosis of DM during the 2019 surveys, and 20.0% (3/15) reported the presence of long, thick, or ingrown toenails. In 2020, twenty-one patients reported a diagnosis of DM, and 23.8% (5/21) reported the presence of toenail deformities. No foot ulcers were recorded.

Conclusions: Early detection of toenail deformities and referral to a podiatrist is crucial to prevent development of DFU in the rural older adult population.

Significance: Conducting regular foot exams within the diabetic, rural older adult population can help prevent future foot ulcers and the potential complications associated with DFU.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #3

Category: Clinical Vignette

School: Kansas City University College of Osteopathic Medicine

Clerkship Director: Joshua Hughes

Presenter: Melanie Taylor

Additional Authors: Rani Kattoula, DO

A Rare Presentation of Plasma Cell Leukemia Presenting as Right Upper Quadrant Pain

Primary plasma cell leukemia is an exceedingly rare and rapidly fatal lymphocytic cancer affecting only 0.6% of patients with multiple myeloma. This rare variant is characterized by a plasma cell predominance within peripheral circulation and markedly poor prognosis, with a median survival rate of 7 to 14 months. This was a case of a 51 y/o Caucasian male who presented to the ED with RUQ pain present for 1-2 months, characterized as dull with radiation to the back. Review of systems revealed a 20lb weight loss in the last 30 days, night sweats, and increasing fatigue. The service of hematology/oncology was consulted with suspicion of underlying lymphoproliferative disorder and possible underlying leukemia/lymphoma. Peripheral blood flow cytometry confirmed diagnosis of multiple myeloma with plasma cell leukemia, revealing a population of malignant circulating plasma cells comprising 55.4% of viable leukocytes. Plasma cell leukemia is a rare diagnosis that can present similar to multiple myeloma and other leukemias with symptoms including bone pain, leukocytosis, and hepatomegaly. This patient presented with RUQ abdominal pain that was initially suspected to be cholestatic in nature. Ultimately this pain was attributed to hepatomegaly, which was likely a complication of the underlying malignancy and is present in 21% of plasma cell leukemia cases. The aggressive nature of this disease mandates early recognition and prompt therapy to ensure the best quality of life for the patient.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #4

Category: Clinical Vignette

School: Michigan State University College of Human Medicine

Clerkship Director: Churlson Han, MD, ACP Member

Presenter: Trey Williams

Additional Authors: Esosa Ukponmwan M.D., Surya Chennupati D.O., Abdul-Fatawu Osman M.D.

Atypical Initial Presentation of Multiple Primary Malignant Neoplasms

Multiple primary malignant neoplasms (MPMN's) in a single patient can occur in individuals who have a strong genetic predisposition such as those seen in von-Hippel Lindau or Lynch syndrome, but are typically coincidental findings after managing a single malignant lesion. The occurrence of these coincidental findings in the setting of autoimmune conditions raise questions about whether these malignancies are the result of autonomous generation due to systemic inflammation resulting in disordered cellular growth, or whether they are the result of metastasis of cancer to another cancer, especially when the same organ system is involved. Herein we present an interesting case of a 57 year old female without physician follow-up in over 15 years with a history of rheumatoid arthritis, presenting to the hospital with progressively enlarging painful skin lesions. The first lesion appeared four months prior to presentation as a small pimple on the left posterior arm. The patient self-extracted the pimple which drained "pus" per the patient. The patient noticed that the area did not heal and remained ulcerated. She noted changes in color and increasing size of the lesion weekly. Three months following the initial lesion, the patient noted a similar lesion on the left deltoid that began to grow as well. During this time, the patient endorsed weight loss but attributed this to not eating due to being the primary caregiver of her adult disabled child. CT chest/abdomen/pelvis showed a right suprahilar partially calcified mass and bilateral peribronchial nodules in the lower lobes. General surgery performed an elective incisional biopsy of the lesions on the arm in the OR. Microscopic sections of the proximal deltoid lesion revealed ulcerated basal cell carcinoma with fibrosing pattern extending into the peripheral edge. The microscopic sections of the posterior arm lesions showed keratinizing invasive moderately differentiated squamous cell carcinoma accompanied with exuberant fibrinopurulent hemorrhagic scale. Pulmonology performed a bronchoscopy and biopsy of the endobronchial lesion. Analysis was positive for malignancy with small cell undifferentiated neuroendocrine carcinoma. The patient is currently receiving chemotherapy in addition to radiation therapy.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #5

Category: Clinical Vignette

School: Michigan State University College of Osteopathic Medicine

Clerkship Director: Susan Enright, DO

Presenter: Adam Basha

Additional Authors: Jonathan Wang, Dr. Jerry Yee, M.D. MACP, FRCP, FASN, FNKF

Tolvaptan-Resistant Hyponatremia from Excessive Electrolyte-Free Water

Refractory hypotonic hyponatremia in heart failure (HF) is a treatment challenge. Combined therapy of an aquaretic, a diuretic that principally excretes water, and loop diuretic has been rarely used in this scenario. We describe successful treatment of refractory hyponatremia in an HF patient with this drug combination plus fluid restriction.

A 33 y.o. male with atrial fibrillation and 35% left ventricular ejection fraction was hospitalized for dyspnea, with edema, ascites, and hyponatremia. He had been treated with apixaban, losartan, torsemide, metolazone, and potassium chloride. Vital signs were T 36.3°C; HR 112 bpm; BP 95/58 mmHg; and RR 18 min⁻¹; BMI 18 kg/m². The patient was coherent, with no neurological abnormalities. Jugular venous distension, ascites, and lower extremity edema were present. Initial plasma sodium concentration (PNa) and osmolality were 116 mEq/L and 268 mosmol/kg H₂O. Intravenous bumetanide therapy was initiated with an 800-ml fluid restriction. After 2 weeks of diuretics, edema resolved, but hyponatremia persisted. Initial brain natriuretic peptide of >2000 pg/ml normalized. Liver transaminase levels, twice normal on admission, declined to normal with decongestion. The addition of oral tolvaptan to increase PNa was unsuccessful at 60 mg daily. Next, the patient disclosed his “snack” regimen of 4.4 L of fluid containing 138 and 137 millimoles of sodium and potassium, respectively. This fluid volume is equivalent to 1.8 L normal saline and 2.1 L of electrolyte-free water (EFW), which lowered the PNa. The snacks were subsequently curtailed and tolvaptan was increased to 120 mg daily, and PNa increased to 130 mEq/L.

Previously, Shibagaki and colleagues (Clin Nephrol. 2015;84:29-38) increased urine volume in HF by combining tolvaptan with furosemide, without fluid restriction. In this case, greater doses of tolvaptan were required with fluid restriction because of dietary addition of 2.1 L of EFW, which lowered PNa by 7 mEq/L. This reduction of PNa occurred because the patient’s BMI was only 18 kg/m². In conclusion, combining bumetanide and tolvaptan, with careful restriction of fluid intake, can elevate PNa by reducing dietary EFW input and increasing diuretic- and aquaretic-induced EFW output in HF with refractory hyponatremia.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #6

Category: Clinical Vignette

School: Oakland University William Beaumont School of Medicine

Clerkship Director: Lynda Misra, DO, MSc, FACP

Presenter: Faris Alkhouri

Additional Authors: Joseph Salib, BS; Jack Artinian, MD

Pituitary Metastasis of Non-Small Cell Lung Cancer

Lung cancer is the most commonly diagnosed cancer worldwide. Metastasis to other organs is also common. Of these, approximately 25% involve metastasis to the brain. In the brain, however, it is known that only 1% of brain metastasis involve the pituitary gland. In this report, we present a 70-year-old woman that was diagnosed with Non-Small Cell Lung Cancer (NSCLC) a year ago presenting with metastasis to the pituitary.

A 70-year-old woman with past medical history of longstanding tobacco abuse, COPD, hypertension, and lung cancer (NSCLC stage IB in the upper right lobe diagnosed 1 year ago) presented to the emergency department with intractable nausea, vomiting, and headache. She described inability to keep food down, weakness, and mild abdominal pain. She denied chest pain, shortness of breath, and current visual disturbances. Neurologic physical exam revealed no focal neurological deficit, no visual field defect, and normal coordination.

Patient had been previously scheduled to receive a pituitary biopsy for this mass that was found on PET scan approximately 1 month prior. MRI of brain revealed a 1.8cm enhancing lesion in the sella turcica affecting the clivus with extension into the pituitary stalk but no cavernous sinus invasion. A transsphenoidal biopsy and subtotal resection yielded metastatic adenocarcinoma of lung primary.

Her perioperative course was complicated by preoperative adrenal insufficiency and postoperative diabetes insipidus, managed by endocrinology. She continued to have persistent headache and nausea, and therefore there was suspicion for leptomeningeal carcinomatosis. MRI spine showed subtle scattered nodular enhancement along the surface of the spinal cord and cauda equina. LP was obtained with results positive for malignant cells.

Subsequently, the patient had immediate placement of Ommaya reservoir and received their first dose of intra-thecal chemotherapy while in the hospital, with plans for both further intra-thecal chemotherapy, systemic chemotherapy and palliative RT to start soon after hospital discharge. This case shows the unique occurrence of lung cancer metastasis to the pituitary region following a stage IB lung cancer diagnosis highlighting the importance of follow up imaging and investigations for metastasis post diagnosis even in the absence of initial metastatic foci.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #7

Category: Clinical Vignette

School: Oakland University William Beaumont School of Medicine

Clerkship Director: Lynda Misra, DO, MSc, FACP

Presenter: Camilla Cascardo

Additional Authors: Alexander Ismail, D.O., Francisco Davila, M.D., Nicole Marijanovich, M.D.

9-Month Course of Refractory Anti-NMDA Receptor Encephalitis with Initial Negative Markers: Diagnostic & Therapeutic Challenges

Background:

Anti-NMDA receptor encephalitis is a progressively debilitating, clinically heterogeneous, frequently fatal disease caused by autoantibodies directed against the N-methyl-D-aspartate receptor that affects 1 in 1.5 million people each year. Risk of misdiagnosis or delayed treatment is high due to variable presentations and potential false negative results.

Case report:

A 28-year-old female without significant medical history or substance abuse presented with suicidal ideation and amnesia, one week after experiencing flu-like symptoms. Within days she developed auditory hallucinations, nonsensical speech, became withdrawn, delusional, impulsive, catatonic, and then selectively mute leading to psychiatric placement. On day 4, she developed status epilepticus leading to respiratory failure requiring intubation, mechanical ventilation and eventual tracheostomy. Constant dyskinesia- and myorhythmia-like movements were observed in the face and extremities. Elevated temperature, fluctuating blood pressures and heart rate demonstrated dysautonomia. Cerebrospinal fluid (CSF) and serum anti-NMDA receptor antibodies were negative. Magnetic resonance imaging was inconclusive, however electroencephalogram demonstrated extreme delta brush, concerning for anti-NMDA receptor encephalitis. Pelvic computerized tomography revealed a right adnexal teratoma. High clinical suspicion led to treatment with high-dose steroids and intravenous immune globulin with no improvement. On day 22, after one plasmapheresis session, repeat CSF serology revealed markedly elevated NMDA antibodies. Rituximab was added onto her regimen and the teratoma was laparoscopically resected, with pathology confirming neuronal components. On day 80, after no improvement, cyclophosphamide was initiated, however intermittent infections repeatedly delayed treatment. On day 147, after three cycles of cyclophosphamide her neurological status began to improve. She participated in intense rehabilitation and was eventually discharged home on day 269.

Conclusion:

Recognizing the variable presentation of anti-NMDA receptor encephalitis is important in avoiding misdiagnosis and delayed treatment. If clinical suspicion remains high despite negative results, repeat testing should be pursued. Clinical response should guide treatment decisions in refractory cases, such as this, where prolonged cyclophosphamide therapy reversed disease progression.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #8

Category: Clinical Vignette

School: Oakland University William Beaumont School of Medicine

Clerkship Director: Lynda Misra, DO, MSc, FACP

Presenter: Batoul Nasser

Additional Authors: Ramona Berghea, MD

A Case of Acute Unilateral Adrenal Hemorrhage Associated with Metastatic Lung Adenocarcinoma

The most common cancer that metastasizes to the adrenal glands is lung cancer. Adrenal hemorrhage due to metastasis of lung cancer is extremely rare and associated with unilateral adrenal hemorrhage, while bilateral adrenal hemorrhages are typically associated with cardiovascular diseases and systemic anticoagulant therapy. Our 55-year-old male with a past medical history significant for metastatic lung adenocarcinoma and coronary artery disease (CAD) presented with acute right upper quadrant abdominal and flank pain. On presentation, patient was in distress, with fatigue, weakness, pain with deep inspiration, nausea, and vomiting. Patient also had anemia (hemoglobin 11.2). A CTA of the abdomen and pelvis showed a 10.7 x 5.9 cm right retroperitoneal hematoma in the region of the right adrenal gland with areas of enhancement on arterial phase imaging, consistent with a unilateral adrenal hemorrhage. He received morphine with improvement of his pain. The volume of the hematoma did not change significantly in size, prompting general surgery and interventional radiology to defer surgical intervention. The patient had a 1-year history of lung adenocarcinoma with adherence to his chemotherapy treatment (Osimertinib) and a 1-year history of CAD with adherence to his anticoagulant (rivaroxaban) and antiplatelet therapy (aspirin, clopidogrel). His anticoagulants, antiplatelet therapy, and chemotherapy were held during his admission. In patients with metastatic lung cancer that present with acute abdominal and flank pain with radiological confirmation of adrenal hemorrhage, an MRI is warranted to rule out adrenal metastasis. This patient's anticoagulant therapy also increases his risk for developing adrenal hemorrhage, but evidence suggests that initiation of anticoagulant therapy increases the risk for bilateral adrenal hemorrhage, rather than unilateral adrenal hemorrhage. This case serves to alert the clinician of rare causes of unilateral adrenal hemorrhages. It also highlights the importance of performing imaging such as CT scan and MRI to rule out adrenal metastasis in patients with lung cancer that present with acute abdominal or flank pain due to the poor prognosis associated with adrenal hemorrhage due to metastasis. Once adrenal metastasis is ruled out, more common causes can be considered on the differential, such as this patient's use of anticoagulants.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #9

Category: Research

School: Oakland University William Beaumont School of Medicine

Clerkship Director: Lynda Misra, DO, MSc, FACP

Presenter: Abiba Salahou

Additional Authors: Deidre Hurse, PhD; Angela Gill, HS-BCP; James F. Grogan, PhD

Evaluating Emotional Distress Among Michigan Food Insecure Communities During the COVID-19 Pandemic

IRB-FY2021-207

Background: Increasing data has shown that in order to understand the pathogenesis and widespread effects of COVID-19 fully, we must broaden the public health discussion surrounding COVID and consider how factors such as access to food have impacted the well-being of racially diverse communities. While the neuropsychological impacts of the COVID-19 Pandemic have been well established, there is limited data on whether the Pandemic has influenced the prevalence of depression and emotional distress amongst food insecure communities. The purpose of this research study is to evaluate how the COVID-19 Pandemic has influenced self-reported emotional distress amongst persons experiencing food insecurity in Southeast Michigan.

Methods: Food insecure individuals living in Southeast Michigan completed a 15 multiple choice question survey evaluating emotional distress during the COVID-19 Pandemic. Food insecurity was defined as persons who self-reported that they “in the last 12 months were worried whether their household would run out of food before they were able to get more”. Participants were recruited from food banks in Southeast Michigan. Exclusion criteria included participants younger than 18 years of age and who were not living in the state of Michigan for at least one year prior to the start of the COVID-19 Pandemic. Categorical variables were analyzed using Fisher’s exact tests.

Results: 96% of participants reported increased anxiety about providing food for themselves and their families since the start of the COVID-19 Pandemic. 88% of participants reported that since the start of the COVID-19 Pandemic, worrying about their food insecurity has caused them increased feelings of emotional distress and depression. Participants who self reported being food insecure during the COVID-19 Pandemic suffered from new onset or worsened depression (P= 0.024).

Conclusion: Racially diverse food insecure communities living in Southeast Michigan have experienced increased depression and emotional distress since the start of the Covid-19 Pandemic. These results depict an alarming trend in the severity of mental health burden amongst marginalized communities during the Covid-19 Pandemic and highlight the need for increased mental health advocacy in clinical practice. However, because study participants were recruited electronically, these results may exclude participants without access to technology.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #10

Category: Clinical Vignette

School: Michigan State University General Medicine

Clerkship Director: Richa Tikaria, MD

Presenter: Madison Polay

Additional Authors: Muhammad Nabeel MD, MPH, FACP

New-Onset Seizure and Hypertensive Emergency—A Unique Sequela of Long-Standing IgA Nephropathy in Adolescence

Introduction

IgA nephropathy is the most common glomerulonephritis worldwide and in pediatric populations. It is commonly triggered by URI or gastrointestinal illness which leads to renal mesangium IgA deposition. Between 15-20% and 30-40% of patients develop end stage renal disease (ESRD) within 10 and 20 years of initial diagnosis, respectively.

Case Presentation

A 23-year-old female with past medical history significant for ESRD with IgA nephropathy (diagnosed age 13), hypertension and hypertensive cardiomyopathy presented to the ED after new-onset tonic-clonic seizure and acute left eye vision loss resolving in 4 hrs. The patient was hospitalized for hypertensive emergency (HE) a month prior. Upon arrival, she was post-ictal with BP 224/149, HR 109, RR 17, SpO2 100% RA. She was given 2x20mg of IV labetalol and 1x10mg of IV hydralazine with no BP improvement after which nicardipine drip was started. Labs revealed BUN/Cr 134/21.8, bicarbonate 15, anion gap 28, blood glucose 121, venous pH of 7.4, BNP >5000, lactic 7.1, WBCs 12.3, hemoglobin 8.6, and platelets 473. CT showed no signs of acute hemorrhage while EEG revealed moderate encephalopathy. EKG showed sinus tachycardia, left ventricular hypertrophy, left atrial enlargement, and QTc of 506. MRI showed evidence of demyelination consistent with prior vasculitis. MRA of the head and neck showed normal circle of Willis and no dural venous sinus thrombosis and normal neck vessels. Echo showed LVEF of 60-65%, severe concentric LVH, and possible PFO/ASD. Ultrasound of lower extremities showed no signs of DVT. Renal ultrasound showed bladder wall thickening consistent with cystitis. Retroperitoneal ultrasound showed severely increased renal echogenicity consistent with renal disease. She had severe anuric AKI causing renal failure and was started on dialysis in the hospital which continued at discharge.

Discussion

New onset-seizure and HE were unique complications of underlying IgA nephropathy and ESRD. The seizure was hypothesized to be caused by uremia and HE. Careful monitoring of kidney function and consideration of immunosuppressive agents in those with IgA nephropathy should be considered to prevent ESRD. In cases of provoked seizure with underlying kidney disease, treatment includes hemodialysis and initiation of antiepileptic drugs if presumed high risk of recurrence.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #11

Category: Clinical Vignette

School: Ross University School of Medicine

Clerkship Director: Geetha Krishnamoorthy, MD, FACP

Presenter: Megan Frame

Additional Authors: Esentur Salamatov, MS3; Justin Dzierzawski, MD; Muhammad Nadeem Khan, MD.

Unilateral Optic Neuritis Post-COVID-19 Infection: A Case Report

Introduction:

Individuals with COVID-19 are usually either asymptomatic or experience mild respiratory symptoms, but some develop life threatening respiratory distress. COVID-19 can also present with extrapulmonary manifestations, involving almost every organ, including the ophthalmic system. Adult optic neuritis is most commonly associated with multiple sclerosis but has rarely been seen with COVID-19. Here we present a case of unilateral optic neuritis due to COVID-19 infection.

Case:

A COVID-19 vaccinated (2 doses of Pfizer) 41-year-old male with no past medical history presented to the hospital, per ophthalmologist recommendations, due to right-sided blurry vision. Patient had a mild COVID-19 infection 2 weeks earlier, which caused minimal upper respiratory symptoms lasting 3 days. The right eye visual loss was progressive and associated with mild pain and photophobia.

The patient had a normal physical examination except for abnormal right eye findings. Visual acuity was 20/400 best corrected on the right with questionable afferent pupillary defect; the left eye visual acuity was 20/50 +2. Intraocular pressures were normal. Fundoscopic exam revealed right disc edema with hyperemia. Right optic nerve posterior segment optical coherence tomography (OCT) revealed elevation in the superior and inferior sectors. Laboratory findings including complete blood count, comprehensive metabolic panel, and repeat COVID RT-PCR test were all unremarkable. Immunological panel: ANA, SM, JO-1, SS-A, SS-B, and SCL-70 were all negative. Lyme disease antibody IgG and syphilis treponemal antibody were negative. Neuromyelitis optica was ruled out because of lack of myelitis and negative Anti-NMO serology. Magnetic resonance imaging (MRI) brain and orbit revealed enhancement and T2 hyperintense signal of the retrobulbar segment of the right optic nerve, consistent with optic neuritis. Empiric therapy with a 5-day course of 1g IV methylprednisolone was initiated. The patient had a very significant response to therapy with an 80% vision improvement by day 5.

Conclusion:

Unilateral optic neuritis can be a complication of COVID-19 infection. If a COVID-19 positive patient develops sudden visual loss, they should be evaluated for development of optic neuritis. If the complication is confirmed, they should be promptly treated with IV methylprednisolone to prevent long-term visual loss.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #12

Category: Clinical Vignette

School: Ross University School of Medicine

Clerkship Director: Geetha Krishnamoorthy, M.D. FACP.

Presenter: Esentur Salamatov

Additional Authors: Shahzad Sami, M.D.; Justin Dzierzawski, M.D.; Aydin Turan, M.D.; Geetha Krishnamoorthy, M.D. FACP.

Immune Thrombocytopenia – What Triggered It? Myelodysplastic Syndrome, Ceftriaxone, COVID-19 Infection, or COVID-19 mRNA Vaccine

Introduction:

Immune thrombocytopenia (ITP) can be autoimmune primary ITP, secondary ITP associated with myeloid and lymphoid clonal disorders and viral infections, or drug-induced ITP. COVID-19 mRNA vaccination has been associated with ITP. We present ITP in association with myelodysplastic syndrome (MDS), COVID-19 infection, mRNA COVID-19 vaccination, and ceftriaxone.

Case Presentation:

An 82-year-old woman with MDS, post mRNA COVID-19 vaccination and booster, presented with fatigue and diarrhea. She was hemodynamically stable, and physical examination was normal. She tested positive for COVID-19, but was not hypoxemic, and did not require steroid. Laboratory evaluation: Hemoglobin: 11g/dL, leucocytes: 2,400/mcL, platelets: 17,000/mcL. She was found to have sepsis due to urinary tract infection and was started on ceftriaxone. Platelets subsequently decreased to 10,000/mcL. Platelet count < 20,000/mcL is rare in heparin induced thrombocytopenia. Therefore, MDS and sepsis related thrombocytopenia was diagnosed. Platelets were transfused. However, platelets dropped to 4,000/mcL. Intravenous methylprednisolone and immunoglobulin were started for suspected immune thrombocytopenia. She showed excellent response, and platelet count increased to 83,000/mcL.

Discussion and Conclusion:

Thrombocytopenia is a commonly encountered problem by Internists, with a multitude of etiologies. Thrombocytopenia due to MDS is usually associated with other cytopenia. Several autoimmune phenomena occur in MDS, but immune thrombocytopenia is rare. ITP mediated by drug dependent antibodies can occur due to beta lactam antibiotics including ceftriaxone. Several cases of ITP due to COVID-19 infection have been documented. About 357 cases of ITP have been reported in the Vaccine Adverse Events Reporting System occurring after mRNA COVID-19 vaccines. ITP incidence in the general population is 3.3 per 100,000. Both new onset as well as exacerbation of preexisting ITP have been reported after mRNA vaccines. Given the millions of vaccination doses, more research is needed to see if ITP is specifically related to vaccination. The incidence of ITP after vaccination is low, and the benefits of vaccination outweigh the risk of ITP. Thrombocytopenia refractory to platelet transfusion is a hallmark of ITP and treatment should not be delayed.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #13

Category: Clinical Vignette

School: Ross University School of Medicine

Clerkship Director: Geetha Krishnamoorthy, MD, FACP

Presenter: Mirna Yacoub

Additional Authors: Ali K. Najjar, Sri Bharathi Yadlapali, Justin Khine

Evidence of Thrombogenesis Recurrence Induced by IgA Antiphospholipid Antibody β 2 Glycoprotein I-Dependent in Early Adulthood

Antiphospholipid antibodies (aPLs) against β 2GPI are considered to be the central of pathogenesis of antiphospholipid syndrome (APS). Autoimmune aPLs are pathogenic as patients are at increased risk of enhancing thrombin generation at a young age. There are only 3 aPLs considered as a diagnostic laboratory marker for APS- IgM, IgG and IgA isotypes. However, the association of the IgA isotypes with clinical thrombosis remains highly controversial.

A 30-year-old male with past medical history of asthma initially presented to the hospital with acute left middle cerebral artery ischemic stroke, which did not get resolved with tPA but was successfully resolved with thromboembolectomy. It was speculated to be associated with a clot from mitral valve prolapse found subsequently on echocardiogram. Twenty-eight days later, the patient presented again with a high-grade luminal narrowing of his mid- and distal left internal carotid artery with 80% narrowing, and an acute dissection of his left internal carotid artery. The recurrence of thrombosis was evaluated through hypercoagulable state workup, which demonstrated evidence of antiphospholipid syndrome with elevated beta-2 glycoprotein IgA antibody titers of more than 150 U/mL. This is one of first cases reported nationwide as evidence of thrombogenesis recurrence induced by IgA antiphospholipid antibody β 2 glycoprotein I-dependent in early adulthood.

IgA anti- β 2GPI antibodies are found to have an association with many clinical manifestations of antiphospholipid syndrome and thrombotic events, particularly arterial thrombosis. To determine the link between the IgA-a β 2GPI antibodies and APS-events in asymptomatic individuals before recommending preventive treatments, there needs to be a broader intention to standardize IgA-a β 2GPI assays as a diagnostic criterion for APS.

Keywords: antiphospholipid antibodies, antiphospholipid syndrome, B2 glycoprotein-I, IgA isotype, thrombosis

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #14

Category: Clinical Vignette

School: St George's University School of Medicine

Clerkship Director: Paul Fozo, MD, FACP

Presenter: Kirollos Eskander

Additional Authors: Jordan Swisher, DO

Use of Bedside Ultrasonography in Detecting Post-Myocardial Infarction Ventricular Septal Rupture (VSR): A Case Report

Background:

Ventricular septal rupture (VSR) is a rare, but well-documented, mechanical complication of myocardial infarctions that is usually fatal without surgical intervention. Therefore, early detection with ultrasonography is key to survival. Management includes medically maintaining adequate blood pressure while decreasing afterload to reduce cardiac strain and ultimately surgical repair of the VSR.

Case summary:

A 77-year-old Caucasian male with a history significant for 30-pack-years smoking and coronary artery disease status-post coronary artery bypass graft surgery, on warfarin and dual antiplatelet therapy, presented one day after the onset of chest pain. He was bradycardic, hypotensive, with elevated cardiac enzymes and anterior STEMI and RBBB on ECG. He had a 4 cm ventricular septal rupture extending from the perimembranous to the muscular septum and a left ventricle ejection fraction of 40-45%. Percutaneous coronary intervention showed complete occlusion of the left anterior descending artery and 99% occlusion of the saphenous venous graft to the posterior descending artery. An intra-aortic balloon pump and vasopressors were used to maintain adequate blood pressure. However, the patient never regained hemodynamic stability and therefore could not undergo surgical repair of the VSR. The patient continued to experience episodes of bradycardia and asystole. Due to multiorgan failure and poor prognosis, the patient was placed on comfort care, extubated, and died of cardiac arrest.

Conclusion

Ventricular septal rupture can be a fatal sequela of acute myocardial infarction, irrespective of left ventricular ejection fraction, if not caught early and surgically repaired. Therefore, we believe POCUS may be used as a potential screening tool in ruling out structural defects as the underlying etiology of bradycardia with a heart block in patients presenting with symptoms suggestive of acute coronary syndrome.

Our patient had a classic presentation for post-MI complications, and we believe detection of VSR with bedside ultrasound could have led to earlier surgical intervention before he went into cardiogenic shock.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #15

Category: Research

School: University of Michigan Medical School

Clerkship Director: Cyril Grum, MD, FACP

Presenter: Namratha Atluri

Additional Authors: Dr. Titus Beyuo, Dr. Emma R. Lawrence

Feasibility and Utility of Home Blood Pressure Monitoring in a Low-Resource Setting

Introduction: Delayed diagnosis of hypertensive disorders of pregnancy contributes to serious health complications, including seizure, stroke, and acute kidney injury. Patient-performed home blood pressure (BP) monitoring is recommended in the management of chronic hypertension and could facilitate earlier diagnosis of hypertensive disorders of pregnancy. However, challenges may exist to implementation in low-resource settings.

Methods: This cross-sectional study was carried out at the Korle Bu Teaching Hospital (KBTH), a tertiary hospital in urban Ghana, West Africa. Electronic surveys were completed by 71 doctors providing obstetric care at KBTH, including 24 house officers, 42 residents, and 5 attendings (59% response rate). Questions asked about demographics, provider attitudes and interpretation of home BP monitoring, and provider-perceived barriers. Surveys included three 4-item validated scales: the Acceptability of Intervention Measure (AIM), the Intervention Appropriateness Measure (IAM), and the Feasibility of Intervention Measure (FIM). Electronic informed consent was obtained. Institutional Review Board approval was granted by KBTH (KBTH-STC 00098/2021) and University of Michigan (HUM00200589).

Results: Among 71 doctors who provide obstetric care at KBTH, 96.9% agreed home BP monitoring would facilitate early diagnosis of hypertensive disorders of pregnancy, and 93.7% agreed it could reduce poor health outcomes. The vast majority would recommend home BP monitoring to their patients (90.7%), trust the accuracy of patient-performed BPs (72.2%), and would use home BPs to guide their clinical decision-making (83.7%). On a scale from 1 to 5, implementation of home BP monitoring had an acceptability (AIM) of 4.24 (sd 0.04), appropriateness (IAM) of 4.15 (sd 0.06) and feasibility (FIM) of 4.01 (sd 0.18). The most cited barriers to home BP monitoring include cost of monitors, lack of a communication system to convey abnormal values, and patient health literacy.

Conclusions: Providers believe home BP monitoring would be acceptable, appropriate, and feasible in a low-resource setting. Addressing the most significant provider-identified barriers is essential for successful implementation of home BP monitoring. Home BP monitoring has the potential to improve management for hypertensive disorders of pregnancy and can be applied to even non-pregnant populations in low-resource settings.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #16

Category: Clinical Vignette

School: University of Michigan Medical School

Clerkship Director: Cyril Grum, MD, FACP

Presenter: Andrew Benvenuto

Additional Authors: Albert Ha, MD, Sonia Iyengar, BS, Joshua Mekler, MD, Aaron Sifuentes, MD, Stephanie Czarnik, MD

The Cat and the Rash

66-year-old female with a past medical history of COPD, CAD, aortic stenosis s/p CABG and bioprosthetic TAVR, HFpEF, CVA, and CKD III presented to the ED with a rash and worsening renal function. The day following a picnic in Southeast Michigan she developed an erythematous, pruritic, painful rash on her left foot and thigh that had progressed for weeks. She denied weight loss, abdominal pain, fever, chills or new joint pain. On physical examination, she had purpuric macules and papules coalescing on her bilateral soles, dorsal feet, and legs with several central hemorrhagic vesicles, and a loud systolic crescendo-decrescendo murmur across the precordium. Initial labs revealed a creatinine of 3.35 (baseline 1.9), CRP 6.2, ESR 46, UA positive for blood, protein, and glucose.

Blood cultures grew gram positive cocci in chains (1 out of 4 bottles), later determined to be a contaminant. A punch biopsy of the left thigh demonstrated leukocytoclastic vasculitis. ANA, C3/C4, CRP, ANCA, PR3, MPO, cryoglobulin, QuantiFERON Gold, HIV and hepatitis were negative. Antibodies for Babesiosis, Rocky Mountain Spotted Fever and Q-fever were negative. Antibodies for Ehrlichia and Anaplasma were positive, leading to initiation of doxycycline and improvement in her rash and renal function. Transesophageal echocardiogram was suspicious for prosthetic valve endocarditis with paravalvular abscess. Bartonella henselae antibodies were sent prior to discharge. She was discharged on IV vancomycin, ceftriaxone, and rifampin. Days after discharge B. henselae serology resulted strongly positive (1:16384). Additional history revealed she had frequent exposure to a feral cat that scratched her legs while playing cards with friends. Vancomycin and ceftriaxone were discontinued, and doxycycline restarted. TEE 6 weeks later showed new aortic regurgitation and probable root abscess, requiring surgical intervention.

Bartonella henselae causes Cat Scratch Disease (CSD) and is an uncommon cause of culture-negative endocarditis. Leukocytoclastic vasculitis is a known idiopathic manifestation of bartonella infection and can be a feature of subacute bacterial endocarditis. We share this case as a reminder of the association of leukocytoclastic vasculitis and endocarditis and to encourage evaluation for additional etiologies including Bartonella when initial blood cultures do not reveal the cause.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #17

Category: CQI/EBM

School: University of Michigan Medical School

Clerkship Director: Cyril Grum, MD, FACP

Presenter: Michelle Ng

Additional Authors: Cara McDonagh MD, Michael Mendez MD, Jill Savage LMSW

Designing a Protocol to Promote Advance Care Planning in VA Outpatient Clinics

Advance care planning (ACP) is essential to indicate patients' goals of care and preferences for life-sustaining treatments, in the event that they lose the ability to speak for themselves. Studies have shown that ACP reduces unnecessary hospitalizations and aggressive end-of-life treatments.

Primary care physicians are well-positioned to initiate ACP as they have developed trusted, longitudinal relationships with patients, yet ACP is not routinely done in the clinic. At the VA Ann Arbor Healthcare System (VAAAHS), only 25% of ACP occur in the outpatient setting, of which 5% occur in primary care clinics specifically. The remaining 75% of all ACP occur inpatient or in the Community Living Center (subacute rehab and nursing home services). Time constraints, competing clinical priorities, and lack of a standardized protocol have been identified as barriers to ACP in the clinic.

We conducted a pilot study that aimed to increase ACP in the outpatient clinics at the VAAAHS. High-risk patients were identified through the use of the Care Assessment Needs (CAN) score that indicates the likelihood of hospitalization or mortality within the next 90 days. Veterans with a CAN score ≥ 90 in a primary care clinic and a pulmonary clinic were called and administered a questionnaire exploring their goals and values, which were documented in a Goals and Preferences (G&P) note. At their next clinic appointment, patients engaged in a follow-up ACP conversation that was documented in a Life-Sustaining Treatment Initiative (LSTI) note and signed any advance directive documents.

A total of 127 patients qualified for the study, 102 from primary care clinic and 25 from pulmonary clinic. Of these patients, 51 primary care and 12 pulmonary patients completed the phone intervention and received a G&P note. Of those patients, 43% of the primary care patients and 33% of the pulmonary patients received a LSTI note. Overall, there was a 20% and 16% increase in LSTI notes in the primary care clinic and pulmonary clinic respectively post-intervention.

This project demonstrates that there is potential to increase ACP in outpatient clinics by using a pre-clinic intervention to streamline the process and prepare patients for these vital conversations.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #18

Category: Clinical Vignette

School: University of Michigan Medical School

Clerkship Director: Cyril Grum, MD, FACP

Presenter: Kyra Sagal

Additional Authors: Sarah Hartley, MD

Pyoderma gangrenosum: A Sign of Disease from Within

Case Presentation: A 29-year-old man with no past medical history presented as an outside hospital transfer with fever, migratory arthralgias, bilateral lower extremity pustular, erythematous lesions, and diarrhea for 4 weeks. On exam, he was afebrile and tachypneic with a 5 cm pustular lesion with surrounding erythema on the left thigh and round, violaceous, 7 cm dusky plaques with bullae bilaterally at the medial malleoli. WBC 30.1, ESR 57, CRP 9.3, fecal calprotectin 320.1 (normal <50 mg/kg), C3 59 (83-240 mg/dL), C4 8 (13-60 mg/dL), and positive c-ANCA 1:20. Rheumatoid Factor, CCP, and p-ANCA were negative. Incision and drainage of the left thigh and bilateral ankle lesions were performed, with evidence of necrotic tissue but negative cultures. Given his history of diarrhea, inflammatory bowel disease (IBD) was considered in the differential, which prompted upper endoscopy and colonoscopy. The colonoscopy biopsy showed granulation tissue possibly consistent with early Crohn's disease and was negative for CMV. Biopsies were performed and were most consistent with pyoderma gangrenosum. High-dose steroids were initiated with improvement in the patient's skin lesions.

Discussion: While the patient's initial concern was his skin lesions, a thorough history revealed that he had both systemic and gastrointestinal symptoms as well. Pyoderma gangrenosum is associated with several diseases and most often found in inflammatory bowel disease, vasculitis, and hematological malignancy. In this case, biopsy from the colonoscopy showed granulation tissue that could be consistent with Crohn's, but previous studies have shown no correlation between exacerbations from IBD and pyoderma gangrenosum in individuals with both. This patient was started on IV methylprednisolone, transitioned to an oral taper with prednisone, then to cyclosporine with planned follow up with Dermatology, Gastroenterology, and Plastic Surgery for wound care.

Conclusion: In cases of inflammatory bowel disease, patients may present with extraintestinal symptoms. It is important for patients with a new diagnosis of pyoderma gangrenosum to undergo a thorough workup for an underlying disease process, and if negative, to have close follow up because the presence of pyoderma gangrenosum may not correlate with the severity of gastrointestinal exacerbations.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #19

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Varag Abed

Additional Authors: Alexis Faber, MD; Raef Fadel, DO

Intussusception in the Setting of an Ulcerative Colitis Flare

Intussusception is an extraordinary cause of acute abdomen in adults and has been defined as the telescoping of a bowel segment into the lumen of an adjacent segment. In patients with ulcerative colitis (UC), seven cases of concurrent intussusception have been reported in the literature.

A 43-year-old female presented to our hospital's emergency department (ED) with 10+ episodes of bloody diarrhea per day, left-sided abdominal pain, and the inability to tolerate oral intake for one month. She was initially diagnosed with UC ten years ago and is currently on mesalamine oral and enema therapy. She presented to our gastroenterology (GI) clinic two weeks after the beginning of her flare and was started on prednisone 40 mg daily. This did not improve her symptoms, and she presented to the emergency department two weeks later. In the ED, she was found to have an elevated c-reactive protein of 4.4 mg/dL, erythrocyte sedimentation rate of 51 mm/Hr, blood pressure of 164/101 mmHg, pulse of 107 with a soft, non-distended, tender abdomen, and dry mucous membranes. She underwent a computed tomography (CT) abdomen/pelvis which revealed intussusception in the left hemiabdomen with no definite lead point measuring 5.6 cm in the craniocaudal dimension with pneumatosis and no evidence of bowel obstruction. There were no other significant laboratory abnormalities. Acute care surgery was consulted and suggested obtaining a CT enterography for further evaluation which showed spontaneous resolution of the intussusception with no evidence of pneumatosis, portal venous gas, or intraperitoneal free air. She reports that following oral contrast intake she "felt movement and relaxation" in her abdomen with substantial pain relief. She was subsequently transferred to the medicine floor with a GI consultation for management of her UC flare. Infectious workup was negative and therapy was initiated with intravenous steroids. Her hospital stay was uneventful as she was discharged five days later with GI follow-up.

In conclusion, intussusception has been very rarely reported in patients with UC with the most common treatment being surgical resection. However, conservative management in the absence of bowel obstruction can be attempted.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #20

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Amer Abu-kwaik

Additional Authors: Ahmed Oudeif MD

Severe C.diff Infection in Rheumatoid Arthritis Patient on Leflunomide

Introduction:

Clostridium difficile infection (CDI) is one of the most common health care-associated infections and a significant cause of morbidity and mortality, especially among hospitalized older adult patients. It is a gram-positive anaerobic spore-forming, toxin-producing bacterium that typically causes an antibiotic-associated colitis. Most cases of C. difficile will respond to antibiotic therapy, but 3% to 10% of patients progress to a severe, complicated or "fulminant" state of life-threatening systemic toxicity. We present a rare case of a fulminant CDI associated with Leflunomide use.

Case:

The patient is a 74-year-old male with PMH significant for rheumatoid arthritis on Leflunomide, remote non-small cell lung cancer status post right upper lobectomy (RUL), COPD, celiac disease and active pulmonary nocardia pneumonia treated with Bactrim and ceftriaxone. He presented with nausea, vomiting, diarrhea and hematochezia. He was started on PO vancomycin and IV metronidazole. Due to no improvement, metronidazole was discontinued and eravacycline was initiated on day 6 of presentation. Additionally, an abdominal CT was done and showed diffuse gastritis, enteritis and colitis. Patient did not improve despite treatment with 17 days of PO vancomycin and 13 days eravacycline. Fecal transplantation was performed a total of four times without improvement, on days 18, 21, 22 and 27. Patient continued to deteriorate, with course complicated by multiple episodes of supraventricular tachycardia, hypoxic respiratory failure and septic shock. He passed away after a month in the hospital.

Discussion:

Enteritis and gastritis caused by CDI is very rare. This severe presentation in conjunction with concurrent use of leflunomide makes this a particularly important case to study. A higher suspicion of severe CDI upon presentation in higher risk, immunocompromised, patients such as those on Leflunomide, may lead to more rapid diagnosis, aggressive treatment and improved morbidity and mortality in these patients.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #21

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Silvia Aluia

Additional Authors: Medha Cherabuddi MBBS, Sally Faiz-Khalil Askar MD MPH, Megan Scott MD MPH, Marcus Zervos MD

Stop and Smell the Roses: A Case of *Roseomonas mucosa* Bacteremia in an Immunocompetent Patient

A previously healthy 19-year-old female presented after a fall and was found to have a sacral wound. On presentation, she was febrile, hypotensive, and tachycardic with leukocytosis of 18,800/ μ L. She underwent surgical debridement of an infected sacral hematoma; sacral wound culture grew *Actinomyces*, *Bacteroides*, and *Prevotella*. The initial regimen of vancomycin, cefepime and metronidazole was later switched to piperacillin-tazobactam with placement of a peripherally inserted central catheter. On day 22 of hospitalization, she became febrile with blood cultures positive for *Roseomonas mucosa* growth 1 week after collection. The catheter, which was in place for 21 days, was deemed to be the likely source and was removed. Meropenem was initiated; subsequent blood cultures were negative and transesophageal echocardiogram excluded infective endocarditis. Given the rarity of this presentation in a young, healthy patient, further workup was obtained to assess for autoimmune diseases. Workup revealed positive ANA in 1:160 titers, a nonspecific finding, and atypical c-ANCA pattern, which was attributed to ongoing infection. Negative workup included nonreactive HIV, normal levels of IgG, IgM, and IgA, and negative anti-Ro/La and p-ANCA. *Roseomonas mucosa* is a pink-pigmented, slow-growing, aerobic, gram-negative coccobacillus which is commonly isolated from environmental sources and suggested to be associated with skin microbiota. The species is highly resistant to penicillins, piperacillin-tazobactam, and cephalosporins and susceptible to carbapenems, aminoglycosides, and quinolones, as was demonstrated in this case. *Roseomonas* species have low pathogenicity and infections are rare; opportunistic infections are found in immunocompromised individuals, cancer patients on chemotherapy, and in neutropenic and autoimmune disease. However, 2 case reports were identified which describe *Roseomonas mucosa* infection in immunocompetent individuals. Catheter-related bacteremia is among the most common manifestations; *Roseomonas* species form mucoid biofilms and may transiently colonize sterile catheters. Infection can easily be missed if cultures are not held long enough, as in our patient with no culture growth until 7 days, and *Roseomonas* species can be misidentified using automated laboratory identification methods. To our knowledge, this is one of the few reported cases of *Roseomonas mucosa* bacteremia in an immunocompetent patient and represents an atypical presentation of this rare bacterial species.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #22

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Shiva Bongu

Additional Authors: Caroline Amakove; Malitha Hettiarachchi, M.D.

A Unique Case of Candida Retinitis in the COVID-19 Era

Case:

A 56-year-old male with a history of asthma was admitted to the intensive care unit (ICU) for acute hypoxic respiratory failure. He was found to have sepsis secondary to pneumococcal pneumonia superinfected by COVID-19. Chest x-ray initially demonstrated left lower lobe pneumonia but later worsened to persistent multifocal pneumonia. The patient was intubated and treated with enoxaparin and a ten-day course of dexamethasone as well as antibiotics due to worsening clinical status. After the COVID-19 course resolved and the patient was extubated, he developed sepsis again - this time secondary to Candidemia. Treatment with intravenous micafungin was initiated and HIV antibodies screening returned negative. The patient began to report subacute visual changes including floating spots and blurry vision in the right eye without any other acute ocular symptoms. Upon ophthalmological exam, there were multiple white retinal lesions without vitreous involvement bilaterally on the macula indicating candida retinitis. Antifungal treatment with micafungin was changed to intravenous voriconazole for greater intraocular penetration. After seven days of intravenous voriconazole, two blood cultures came back negative for Candida. At this point, the patient was medically stable and was discharged on a six-week course of oral voriconazole.

Discussion:

The COVID-19 pandemic changed the landscape of medicine. Not only have healthcare systems worked hard to treat the COVID-19 infections themselves but also the long-term effects that result from an infection. As treatment guidelines have been developed, steroids appear at the forefront of therapy. However, this does not come without consequences as prolonged use of corticosteroids can dampen the body's immune system. This compounds the ability of COVID-19 pneumonia to result in a severely immunocompromised state that can subsequently expose the body to opportunistic infections.

Candida albicans is an organism that exists in all humans in the gastrointestinal and genitourinary systems typically without impact. In severely immunocompromised individuals, hospital courses involving ICU care can lead to hematogenous spread of *Candida*. The candidemia leads to sepsis and may also present with rare clinical pictures such as *Candida* retinitis. For this reason, candidemia should prompt thorough evaluation of patients with an echocardiogram, abdominal computer tomography, and ophthalmologic exam.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #23

Category: Research

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Collin Brooks

Additional Authors: Kartik Gupta, Tanya Singh Kakar, Navkaranbir S. Bajaj, Geoffrey D. Barnes, Scott Kaatz

Extended Duration Thromboprophylaxis for Medical Illness After Hospital Discharge: A Systematic Review and Meta-Analysis

BACKGROUND

The risk of venous thromboembolism (VTE) after hospital discharge for medical illness remains high. Extending thromboprophylaxis beyond discharge for this group of patients is not recommended by guidelines. However, recent evidence of increased VTE-related events during the COVID-19 pandemic has renewed interest in extended duration thromboprophylaxis (EDT). Current meta-analyses were published before the COVID-19 pandemic. We conducted an updated systematic review and meta-analysis on the role of EDT in medical illness.

METHODS

We searched PubMed, Cochrane Central, Embase, and ClinicalTrials.gov for randomized control trials (RCTs) from inception till January 10, 2022. The primary efficacy and safety endpoint for this meta-analysis was symptomatic VTE or VTE-related death and major bleeding, respectively. The RCTs were stratified by inclusion criteria: COVID-19 and non-COVID-19. Random effects models were used to generate effect estimates. The cumulative number needed to treat (NNT), and the number needed to harm (NNH) were calculated for both events. Other outcomes studied were trial-defined primary efficacy and safety endpoints, and all-cause mortality.

RESULTS

Among 6 RCTs with 37,325 patients, the median duration of EDT varied from 35-42 days. EDT reduced the rate of symptomatic VTE or VTE-related death by 43% (HR 0.57, 95% CI 0.41, 0.81, $p=0.001$). Maximum risk reduction was observed in the MICHELLE trial, which was the only trial to include patients with COVID-19 at high risk of thrombosis. Risk of major bleeding was increased by 101% (95% CI 1.45, 2.78, $p<0.005$) with no difference in all-cause mortality (HR 0.97, 95% CI 0.87, 1.08). The number needed to prevent one symptomatic VTE or VTE-related death and cause one episode of major bleeding was 200 (95% CI 143, 500) and 333 (95% CI 200, 1000), respectively.

CONCLUSIONS

EDT significantly reduced the rate of VTE or VTE-related death for patients with medical illness with increased major bleeding and no difference in all-cause mortality. Maximum risk reduction without an increase in bleeding was seen in high-risk patients with COVID-19. More randomized trials exclusively studying patients with COVID-19 are eagerly awaited.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #24

Category: Research

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Kaycee Ching

Additional Authors: Tabitha E. H. Moses, Jessica Moreno, Eva Waineo, Mark K. Greenwald

What Experiences Impact First-Year Medical Students' Views on Naloxone Access?

Background:

In 2020, there was a 37% increase in opioid overdose deaths.¹ Naloxone is a medication that rapidly reverses opioid overdose. Increased naloxone access reduces overdose deaths.² Barriers to naloxone access include pharmacy availability, high costs, and lingering stigma.³ Our study examined how previous healthcare and personal experiences with opioid use disorder (OUD) or another substance use disorder (SUD) prior to medical school affects student beliefs regarding naloxone access, and whether naloxone training and education impacts these beliefs.

Methods:

All first-year medical students at Wayne State University School of Medicine (WSUSOM) were asked to complete a survey before and after Opioid Overdose Prevention and Response Training (OOPRT). We used Pearson Chi square correlations to explore relationships between a student's previous clinical and life experience with OUD/SUD and opinions on 1) naloxone availability without a prescription, 2) who should have access to naloxone. Using RM ANOVA, we then explored the change in these outcomes post-training and the interaction between personal experiences and training.

Results:

Among participating students (n=238), we found that knowing someone with a SUD was associated with more nonrestrictive views regarding naloxone access and availability both in general (p=.007) and for specific groups (e.g. people prescribed opioids). Clinical experience working with people with OUD had no impact on these pre-training outcomes. Additionally, OOPRT had a significant impact on students' positive opinions on naloxone availability without a prescription (p<.001) and whether naloxone should be distributed for free to people at high risk of overdose (p<.001).

Conclusions:

Students entering medical school who know someone with a SUD had more positive opinions towards expanding naloxone availability and distribution compared to those with clinical experience with OUD. Training also significantly positively impacted student's opinions on naloxone access. These findings highlight the need for medical education on naloxone access and merit further attention.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #25

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Tara Gloystein

Additional Authors: Molly Belisle M.D., Martin Tuma M.D.

Acute Limb Ischemia in the Setting of COVID-19

Introduction:

The COVID-19 virus is associated with a hypercoagulable state and increased risk of thromboembolic events. Most reported thrombotic complications are in relation to DVT and PE, while data regarding arterial thrombosis is limited. We discuss a case report of a patient who developed an acute infrarenal abdominal aortic thrombus with subsequent limb ischemia in the setting of COVID-19 pneumonia.

Case Presentation:

A 58-year-old male with history of COPD presented with tachycardia, worsening shortness of breath and pulse oximeter readings of 88%. He was admitted inpatient for acute hypoxic respiratory failure, eventually being transferred to the MICU for escalating oxygen requirements. On hospital day 9, the patient developed left lower extremity numbness and tingling with associated pain. The left dorsalis pedis and posterior tibial pulses were absent with doppler ultrasound and vascular surgery was consulted for acute left limb ischemia. A computed tomography angiography with runoff was obtained which displayed thrombosis of the infrarenal aorta and occlusion of the left common, external, and internal iliac arteries. A heparin drip was initiated and cardiac echocardiogram was within normal limits. He underwent a bilateral femoral cutdown, aortic thrombectomy, left external iliac artery thrombectomy, balloon occlusion of the right common iliac artery, aortogram, bilateral pelvic arteriogram, embolectomy of left posterior tibial artery, and embolectomy of the left anterior tibial artery. Post-operatively the patient had dopplerable signals of the posterior tibial and dorsalis pedis arteries. The patient was extubated on post-op day 4 and his oxygen requirements progressively improved. Prior to discharge, he was switched from the heparin drip to Xarelto for 3 months of anticoagulation therapy.

Discussion:

The patient is an overall healthy middle-aged gentleman with no history of known prothrombotic disease or atrial fibrillation. Despite antithrombotic prophylaxis, the patient developed an aortic thrombosis and subsequent ischemic event. Early recognition of acute limb ischemia is critical, and can maximize the chance for limb salvage. Thus, providers must be aware of the arterial complications of COVID-19 and initiate early intervention.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #26

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Sarah Gonzalez

Additional Authors: Dr. Andrew King PhD, MD, Dr. Sarah Petry MD, Dr. Meena Mossavi MPH, MD

Nodular Melanoma in an African American-Japanese Navy Veteran

Malignant melanoma does not commonly affect skin of color (SOC) patients. However, of the different melanoma subtypes, acral lentiginous melanoma (ALM) most commonly affects Asians and African Americans. Nodular melanoma (NM), a rare, aggressive, and rapidly progressive is rare in all skin types, but especially in those with SOC. A 60-year-old male Navy veteran of African American and Japanese descent sought a dermatology consult for concerns of a growing lesion on his left lower abdomen. The patient admitted that the lesion had been present for many years but was recently growing rapidly in size, getting caught on his belt, and bleeding. There was no personal or family history of skin cancer. The patient was a U.S. Navy veteran stationed mostly in Europe. The patient spent a considerable time outdoors working as a deckhand. He denied any previous trauma or history of prior sunburn. Despite the rarity of melanoma in SOC patients, malignancy was considered due to the friable appearance of the lesion. A diagnosis of nodular melanoma was made. In SOC patients, only two published case reports of nodular melanoma exist in the United States, and a third from the Caribbean. The US Surveillance, Epidemiology, and End Results (SEER) registry, which surveyed cases of melanoma from 1988-2011, demonstrated 87 cases of nodular melanoma in African Americans, compared to 15,805 cases in Caucasians. Although, melanoma is uncommon in African Americans, of the Asian races, melanoma incidence is twice as high in the Japanese. While darker skin is photo-protective, it is not exempt from ultraviolet damage. However, melanoma risk factors that are recognized for Caucasian skin are not deemed to be risk factors for SOC. Consistent with the genetic mutations observed in nodular melanoma, the patient's NM had a BRAF mutation. NM with BRAF mutations typically arise in anatomical sites that receive intermittent sun exposure, such as the abdomen. Non-ALM in SOC is largely understudied and we hope that this case can bring attention to melanoma in SOC.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #27

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Annika Grupp

Additional Authors: Tara Gloystein, Justin Pawlowski, Rahul Vaidya M.D.

A Case of Varicella-Zoster Virus Encephalitis in an Immunocompetent Patient

Introduction:

Herpes zoster, commonly known as shingles, is caused by the reactivation of varicella-zoster virus (VZV). One of the potential complications of this infection is involvement of the central nervous system causing encephalitis; however this is very uncommon in immunocompetent patients. We discuss a case report of an immunocompetent patient who developed VZV encephalitis after her rash was unidentified perioperatively.

Case Presentation:

A 71-year-old female with history of hypertension, and hyperlipidemia presented with altered mental status and vomiting. History was significant for spine surgery 13-days prior; a left-sided discectomy and foraminotomy for an L4-L5 disc herniation. A rash was discovered intraoperatively, but it went unidentified and no treatment was initiated. On presentation, the acute stroke workup was unremarkable; laboratory studies were significant for leukocytosis to 14.9 and hyponatremia to 119. Examination revealed vesicular lesions on the left-side in a T4-T6 dermatomal distribution. The patient was admitted to the MICU for acute encephalopathy and empiric antibiotics and antivirals were initiated. Contact and airborne precautions were initiated due to concern for disseminated herpes zoster infection. Lumbar puncture revealed leukocytosis with lymphocytic predominance and elevated protein; cerebrospinal fluid polymerase chain reaction (PCR) detected VZV DNA. The diagnosis of acute VZV encephalitis was made. Her treatment was narrowed to acyclovir 10mg/kg every 8 hours (Q8H) for a 14-day course. The patient's clinical condition improved and her mentation quickly returned to baseline. Precautions were discontinued once the vesicles were dry and crusted over. Prior to discharge the patient developed a mild acute kidney injury due to acyclovir-related nephrotoxicity. The dose was adjusted to Q12H and the patient was discharged with a PICC line to finish her course of antivirals.

Discussion:

This case illustrates two noteworthy clinical considerations. Firstly, encephalitis carries a less favorable prognosis compared to other extra-cutaneous complications of VZV and can cause irreversible mental damage without timely treatment. Thus, clinicians must be aware of VZV encephalitis as a cause of altered mental status in both the immunocompromised and immunocompetent patient. Additionally, clinical practice guidelines are lacking for the management of herpes zoster disease in the perioperative setting and how it may differ for elective versus emergent surgeries.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #28

Category: Research

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Meredith Hengy

Additional Authors: Jesse Veenstra, MD, PhD, Kyle Perry, MD, David M. Ozog MD, Ben J. Friedman, MD

ETS-Related Gene (ERG) is Differentially Expressed in Dermatofibroma: A Pilot Immunohistochemical Study

Immunohistochemical staining can be of great utility in differentiating various cutaneous spindle cell neoplasms, particularly when the histomorphological appearance of the lesions is inconclusive. Nuclear staining for ETS-related gene (ERG), a highly sensitive endothelial cell marker, has seldom been studied in the context of cutaneous spindle cell neoplasms. Little is known about its specificity for vascular differentiation. In this pilot study, immunohistochemical analysis for ERG was performed on fifteen dermatofibromas (DF), ten keloids, and nine dermatofibrosarcoma protuberans tumors (DFSP). Consistent nuclear expression of ERG was found in DF [100% (15/15) of the lesions demonstrated >50% labeling of tumor cells with moderate to strong intensity]. However, ERG expression was largely absent in DFSP [89% (8/9) of the lesions demonstrating <50% labeling staining, generally of mild intensity] and hypertrophic scars-keloids [80% (8/10) without expression]. Based on the results of this pilot study, immunohistochemical staining for ERG may prove useful in helping to differentiate DF from DFSP and hypertrophic scars in the context of partial biopsy sampling. If replicated in a larger number of samples, this finding could mitigate the use of costly sequencing panels and potentially avoid unnecessary re-excisions in certain contexts.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #29

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: John Jarad

Additional Authors: Dr. Shirin Zavoshi

Could Covid-19 Have Caused This Patient's Angioedema?

Introduction:

Bradykinin-Mediated Angioedema (BMA) is non-anaphylactic swelling of the lips, mouth, and throat that presents without urticaria. BMA is typically caused by hereditary autosomal dominant inheritance of certain C1 inhibitor genes, iatrogenic with Angiotensin-converting enzyme (ACE) inhibitors, and very rarely infection. Since the start of the SARS-CoV-2 pandemic there have been case reports in which patients with negative family histories, as well as no medication exposures have presented with cases of BMA.

Case Presentation:

A 48 year old male patient presented to the Emergency department (ED) for a less than 12 hour history of lip and throat swelling that caused dysphagia and difficulty breathing. The patient endorsed no fevers, chills, shortness of breath, or any other ROS findings. The patient had done nothing out of the ordinary days leading to the event. The patient was asked about any new travel or exposure and only endorsed starting to use a new dollar store brand detergent a few months prior to the admission. The patient had a significant past medical history only for a gunshot wound to the right thigh complicated by PTSD and a diagnosis of Bipolar disorder. The patient was only taking Duloxetine, Latuda, and Alprazolam, and not on any anti-hypertensive medications at the time of admission. The physical exam was significant for profound swelling of the upper and lower lip which prevented assessment of the throat, the patient had inspiratory stridor, but vesicular lung sounds with good air movement. The patient was found to be incidentally positive for Covid-19 on a rapid antigen test and was placed in isolation. The patient saturated oxygen at 100% on room air and did not have an unstable airway. The patient was treated for presumptive angioedema and started on IV decadron, IV benadryl, and IV pepcid. Within hours of initiating treatment the patient's lips and throat had significant reductions in their swelling and the patient was stable for discharge from the ED without admission.

Discussion:

Covid-19 has been implicated in numerous disease processes, and may have been the pathophysiological origin of this patient's Angioedema given his lack of history significant for other causes.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #30

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Andrew S. Kao

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Complications of Prolonged OptEase IVC Filter Placement

Modern IVC filters are categorized as permanent (PIVC) or retrievable (RIVC) types. PIVC filter is indicated for patients on prolonged or lifelong anticoagulation therapy, whereas RIVC filter offers time to determine the need for permanent prophylaxis. However, PIVC is no longer used as most contraindications to anticoagulation are only temporary. The filter itself disrupts the endothelial architecture, leading to the development of neointimal hyperplasia characterized by vascular remodeling of tunica intima to grow on the filter. Prompt removal of RIVC is necessary when risk of pulmonary embolism is stabilized. Here we present a case of prolonged placement of OptEase RIVC filter with extensive surface areas for intimal hyperplasia, causing subsequent thrombosis.

A 31-year-old morbidly obese female with history of endometrial cancer and saddle pulmonary embolism presented with right lower extremity swelling for one week duration. An OptEase IVC filter was placed in 2016 but was not removed as patient did not follow up for six years. Venoplasty and mechanical thrombectomy of DVT in right common, external iliac and common femoral veins was performed, but patient still complained of right leg pain and edema. During the procedure, the filter already had broken legs and large thrombus was observed extending from filter to right lower extremity. Multiple attempts of retrieval from the femoral and jugular approach were all unsuccessful. Remnants of this chronic thrombus was dislodged into IVC filter. Patient was continued therapeutic anticoagulation and referred to larger hospital center for complex IVC filter retrieval.

Our patient's OptEase IVC filter was left in place for six years duration. Indwelling IVC filter is associated with high risk of morbidity. Short term complications include bleeding and infection, while long term complications include filter fracture, erosion into surrounding vessel, and thrombus formation at the filter itself. The recommended window of retrieval is between 14 and 60 days. Studies have discussed successful removal of OptEase filter for more than 7 years after placement with use of endobronchial forceps and TightRail rotating dilator sheath. However, there remains a lack of standardized guideline as optimal timing of removal is dependent on patient clinical response and postoperative follow up.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #31

Category: Research

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Aditi Kappagantu

Additional Authors: Helena Brantz, MS; Amman Bhasin, BA; Cristina Jageka, BS; Rooqash Ali; Brittany Stopa, MPH; Saef Izzy, MD; Ayaz Khawaja, MD

Systematic Analysis of 175 Patients with COVID-19 and Seizures, Status Epilepticus, or Cortical Myoclonus

Objective

To characterize underlying etiologies, management and outcomes of seizures, status epilepticus, and cortical myoclonus in COVID-19, with individual patient data analysis of published literature.

Methods

Systematic literature review was conducted. Criteria included seizures, status epilepticus, and/or cortical myoclonus developing prior to or during hospitalization, with concomitant COVID-19. COVID-19 severity was dichotomized into mild and severe cases, based on severity of respiratory symptoms. Good outcome was defined as discharge without severe deficits and/or return to near baseline.

Results

A total of 105 studies reporting 176 patients (male 56.3%; mean age 47.8, SD 25.6) were included. Status epilepticus occurred in 47 patients (26.7%), myoclonus in 41 (23.3%), and severe COVID-19 in 90 (53.6%). Seizure-like activity was noted on electroencephalography in 52/103 patients (50.5%). Abnormal cerebrospinal fluid analysis was reported in 40/92 (43.5%) patients. Most common underlying diagnosis amongst known etiology was encephalitis in 47/91 patients (51.6%), followed by infarct (n=18; 19.8%) and intracranial hemorrhage (n=14; 15.4%). The most common antiepileptic medication was levetiracetam (93/130; 71.5%). Pulse-dose steroids were used in 32 (19.3%) patients, whereas intravenous immunoglobulin was used in 22 (13.4%). Overall, 101 patients (63.9%) had good outcomes while 24 (14.6%) died. In multivariate regression, severe COVID-19 (OR=0.116), age (OR=0.980) and intubation (OR=0.303) were associated with worse outcomes. In a separate regression model, encephalitis was associated with good outcomes (OR=6.07), whereas severe COVID-19 predicted worse outcomes (OR=0.17).

Conclusions

Overall outcomes were good in most patients, indicating efficacy of existing antiepileptic treatments. Despite severe COVID-19 strongly predicting poor outcomes, identification of encephalitis as an underlying etiology was still independently associated with good outcome. We recommend obtaining comprehensive neurologic workup to evaluate underlying etiology to direct targeted treatments to achieve better outcomes. Further research should focus on elucidating pathophysiology of encephalitis in COVID-19, and investigate long-term seizure and neurocognitive outcomes.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #32

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Tiffany Khaw

Additional Authors: Jennifer Priessnitz, Ahila Manivannan, Rachel Karmally

A Case of Disseminated *Neisseria mucosa* Infection in a Healthy Host

Non-pathogenic *Neisseria* are naturally occurring, asymptomatic inhabitants of the human oro-nasopharyngeal tract and do not normally cause disease in immunocompetent individuals. Although rare, infection with commensal *Neisseria* in a healthy host presents a difficult diagnostic challenge for clinicians. A previously healthy 66-year-old male presented with a one week history of altered mental status, fever, and anorexia. On initial presentation, the patient was noted to have bilateral lower extremity weakness and a systolic murmur at the apex. He was found to have bilateral subarachnoid hemorrhages with evidence of cerebral septic emboli noted on an MRI of the brain. Blood cultures were positive for non-gonococcal non-meningitidis *Neisseria*, speciated as *Neisseria mucosa*, a commensal nasopharyngeal flora. Transesophageal echocardiography demonstrated a 2.2 x 1cm pedunculated vegetation on the mitral valve, with invasion of the leaflet causing severe mitral regurgitation. The patient was also noted to have significant right dorsal foot pain. 1.5 mL of purulent fluid was aspirated from the second tarsometatarsal joint, and grew the same *Neisseria* species isolated from the blood, indicating likely another septic embolus. HIV was negative, complement levels were within normal limits, and he had no significant risk factors or exposures. He was subsequently started on high-dose intravenous ceftriaxone therapy and successfully underwent a mitral valve replacement.

Previous cases of endocarditis and disseminated disease from commensal *Neisseria* species, including *N. mucosa*, have been described as opportunistic pathogen in immunocompromised patients or those with underlying cardiac disease. Here, we report a unique case of a previously healthy, immunocompetent patient experiencing significant disease with septic emboli to the heart, brain, and joints. It is important for clinicians to recognize the pathogenicity of *Neisseria mucosa*, even in a healthy host, and to treat swiftly to reduce the potential for embolization.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #33

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Austin Mueller

Additional Authors: Pramod Savarau MD

Spontaneous Pneumothorax and Renal Carcinoma: Case Study of Birt-Hogg-Dubé Syndrome

Birt-Hogg-Dubé syndrome (BHDS) is a rare autosomal dominant disorder involving mutations in the folliculin (FLCN) gene on chromosome 17. FLCN is a tumor suppressor gene that regulates cellular proliferation. BHDS is characterized by cutaneous fibrofolliculomas, pulmonary cysts, spontaneous pneumothorax, and a 7-fold increased risk of renal carcinoma (Sattler and Steinlein). With only 400 families diagnosed with BHDS worldwide, BHDS is likely under-diagnosed and unknown to many physicians (Sattler and Steinlein). Our objective is to increase clinical awareness of BHDS and improve patient prognosis through early diagnosis and management.

We report a case of a 49-year-old Caucasian male presenting with sudden chest pain worsened by inspiration. Patient reports BHDS diagnosis through skin biopsy 5 years ago. Examination is significant for cutaneous lesions on the head and neck. No murmurs, chest wall tenderness, wheezing or rhonchi. Patient was afebrile and vitals were stable. EKG did not show ischemic changes. Troponin levels were 0.00. CT chest with contrast showed a small left pneumothorax, emphysematous lungs with scattered atelectasis, and ground-glass opacities bilaterally. General surgery did not recommend intervention for the small pneumothorax. A pulmonologist recommended symptomatic treatment with cough suppressants to prevent bleb rupture. CT abdomen/pelvis showed a simple 2.2cm cyst on the right mid kidney.

The predisposition to renal carcinoma is the most feared complication of BHDS with a morbidity rate of 27-34% in Caucasian populations (Furuya et al.). Therefore, prognosis is critically dependent upon radiologic surveillance and early diagnosis for renal carcinoma to limit metastatic disease. Genetic testing and counseling is advised due to autosomal dominant inheritance. Increased melanoma risk from skin lesions indicates dermatologic examination every 6-12 months, followed by annual abdominal/pelvic MRI or CT with contrast to screen for renal carcinoma. BHDS treatment is dependent upon severity, and may involve laser ablation for fibrofolliculomas, pneumothorax therapy, and nephrectomy for severe renal carcinoma. Based on medical literature, our case confirms all of the long-term clinical manifestations of BHDS. We recommend screening for BHDS in patients with a history of renal carcinoma and spontaneous pneumothorax without another plausible etiology.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #34

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Rachel O'Dell

Additional Authors: Dr. Nayha Shetty, Dr. Odaliz Abreu Lanfranco, Dr. Smitha Gudapati

Cryptococcosis in an Immunocompetent Host

Introduction: Cryptococcosis is a fungal disease that can be caused by *Cryptococcus neoformans* or *Cryptococcus gattii*. *C. neoformans* infections are typically seen in the setting of severe immunosuppression while *C. gattii* has been documented as infectious in both immunocompromised and immunocompetent hosts. We present a case of severe *C. neoformans* infection in an immunocompetent host.

Case: A 41-year-old male with history of sickle cell trait and smoking presented with fever, chills, cough, and two months of pleuritic chest pain. Additional history revealed a 1.5 year history of anorexia, unintentional 50-pound weight loss, and weekly marijuana use since 1995. Physical exam was unremarkable. CT scan revealed multiple bilateral nodular and dense consolidative peripheral opacities and mediastinal and hilar lymphadenopathy. He was discharged with antibiotics for suspected superimposed pneumonia. Two weeks later, he re-presented with worsening productive cough and pleuritic chest pain. Given his progressive course and high-risk history including incarceration and homelessness, he was admitted for further work-up. Labs revealed leukocytosis, elevated ESR and CRP, and positive ANA (speckled pattern, titer 1:320). C-ANCA, CCP, RF, and P-ANCA were normal. HIV and tuberculosis testing were negative. CD4 count was 883. Further work-up revealed a positive serum Cryptococcal antigen (titer 640). CSF studies were negative. Transbronchial biopsy revealed encapsulated yeasts with focal narrow-based budding consistent with *Cryptococcus* species. Culture results confirmed *Cryptococcus neoformans*. The patient underwent induction therapy with amphotericin B and flucytosine, followed by 8 weeks of consolidation with fluconazole with plans for 1 year of maintenance therapy.

Discussion: This case demonstrates a rare instance of disseminated *Cryptococcus neoformans* in an immunocompetent host. We suspect that the patient's history of daily tobacco and marijuana use made him more susceptible to infection, which may have occurred due to exposure to a high inoculum in the setting of his janitorial and construction work or prior homelessness. Additionally, recent research has implicated marijuana as a vector in chronic users, identifying another possible avenue of infection in this patient.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #35

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Dhruvil Patel

Additional Authors: Dhruvil Patel, Sreya Sebastian, Kareem Bazy

Acute Pulmonary Embolism: Provoked or Unprovoked? Only History Will Tell!

The use of easily purchasable, unregulated over the counter supplements is becoming more common in the general population, some of which are known to cause adverse health effects. As an example, external testosterone supplementation is on the rise with notable side effects of which include erythrocytosis which consequently can result in thromboembolism. We present a case of a pulmonary embolism that originally was felt to be unprovoked until further history was elicited due to implications on duration of anticoagulation.

A 48-year-old man with no known history of coronary artery disease, thromboembolism, or smoking presented with acute onset of dyspnea. On presentation, the patient was slightly tachypneic, tachycardic, and hypoxic. Exam was notable for unilateral left lower extremity edema with erythema and warmth. Investigative studies revealed elevated hs-troponins and d-dimer. A CT thorax demonstrated a saddle pulmonary embolism (PE) warranting admission to the medical ICU for closer monitoring. Further studies included a 2-D echo revealing significant right sided dilatation and elevated right ventricular systolic pressures. In view of this right sided heart strain, this PE was officially categorized as sub-massive. Therapeutic interventions included anticoagulation initially with unfractionated heparin which later was transitioned to oral apixiban as well as supplemental oxygen. Indications for IV nor endovascular thrombolytic therapy were met since patient was not hypotensive.

As this presentation appeared to be indicative of an unprovoked PE with implications of indefinite anticoagulation and future need for hypercoagulable workup, the medical team revisited the history, particularly to inquire about over the counter medications, supplements, or herbs. It was then that the patient admitted to over-the counter testosterone supplements that contained Fenugreek extract which has been associated with PE development. The patient was then discharged with the diagnosis of a provoked PE with the treatment plan of 3-6 months of anticoagulation as opposed to indefinite therapy had this been unprovoked. Our case illustrates and underscores the significance of obtaining a history of supplementation use in patients presenting with vascular embolic events potential quickening diagnostic confirmation and saving medical resources for evaluation.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #36

Category: Research

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Avinash Ramkissoon

Additional Authors: Ali, Faria; Vander Woude, Thomas; Brown, Stephen; Rogers, Lisa; Ewing, James; Gadgeel, Shirish

Tumor Vasculature Changes Before or During Treatment to Predict Response to Systemic Therapy

A diagnosis of non-small cell lung cancer (NSCLC) carries a grim prognosis, with 5-year survival rates of 25%. 25-30% of NSCLC patients have brain metastases at initial presentation, which carries an even worse prognosis. New systemic therapies such as targeted-therapies and immuno-therapies have potential to provide better outcomes, but are not without challenges. First, efficacy is limited to a subset of patients. Second, the blood-brain barrier limits penetration, which varies among patients. Third, toxicities can be considerable. Current practice involves waiting 3-6 months to follow-up and assess tumor response; however, by then, it is later than ideal to try other therapies, and too late to limit toxicity. Establishing a non-invasive early predictor of response will accelerate the use of new promising agents and could improve tumor response and outcomes.

Pre-clinical studies demonstrate changes in tumor vasculature hours after treatment are predictive of long-term treatment response. The aim of this study is to use dynamic-contrast enhanced magnetic resonance imaging (DCE-MRI) to evaluate both pre-treatment and post-treatment vascular measures (vascular volume, vascular permeability, interstitial tumor pressure) as predictors of long-term response.

This exploratory clinical study will enroll 20 patients to complete 3 DCE-MRI studies. The response variables will be modeled against the vascular measures at three timepoints (pre-treatment, immediate post-treatment, and standard follow-up interval (6-8 weeks)) to assess the predictive ability of tumor vascular characteristics on survival, tumor progression, and imaging response. The data acquired in this study will be used in planning larger and more comprehensive trials in the future.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #37

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Fariba Rana

Additional Authors: Dr. Fiona Clowney, Dr. Abigail Entz

The Clinical Utility of Antiviral Treatment in Patients with Mollaret's Meningitis

Introduction:

Mollaret's meningitis is a rare form of recurrent aseptic meningitis that is usually associated with HSV-2 infection. Patients typically present with recurrent episodes of meningitis that last 2-5 days and can occur weeks to years apart. There is debate about the treatment of Mollaret's meningitis, with disagreement on the utility of antiviral treatment.

Case Presentation:

A 37-year-old female patient with a history of MS and recurrent aseptic meningitis presented to the ED with acute neck pain/stiffness, headache, and left-sided weakness. She was hemodynamically stable but in significant pain on arrival. Her physical exam was significant for reduced range of motion of the neck. CT head was unremarkable. She was given a migraine cocktail that included dexamethasone and diphenhydramine which provided relief. CSF studies were positive for elevated white blood cell count with lymphocytic predominance along with HSV-2 DNA. She was started on empiric treatment for aseptic meningitis with acyclovir. Of note, MRI did not show evidence of an acute MS flare, making the weakness more likely to have been caused by meningitis. In discussion with infectious disease staff, she was not discharged with acyclovir. She completed a 5-day course of acyclovir while inpatient. After her pain and weakness improved significantly, she was discharged and advised to follow up with her neurologist.

Discussion:

While this patient was given acyclovir, there is not much research evidence supporting the clinical utility of acyclovir in patients with Mollaret's meningitis. Studies have not shown that acyclovir improves the sequela of the meningitis. Therefore, it is reasonable to opt out of using acyclovir and continue with conservative management until the meningitis symptoms self-resolve. Many clinicians may have difficulty with implementing this given the desire to alleviate patient discomfort.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #38

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Swetha Reddi

Additional Authors: Varinder Singh, D.O., Nicholas Konowitz, M.D., Odaliz Abreu Lanfranco, M.D.

True Case of Empyema Caused by *Trueperella Bernardiae*

A 74-year-old man with a history of congestive heart failure, idiopathic recurrent pleural effusions status post long-term left pleural catheter, and colon cancer status post hemicolectomy 3 months prior presented with ascites and edema. He was found to have acute on chronic decompensated systolic heart failure, for which he was medically treated, and subsequently developed worsening shortness of breath and cough. Chest x-ray demonstrated a new loculated right pleural effusion. The patient was started on broad spectrum antibiotics. Pleural fluid cultures from the loculation showed gram positive cocci later on identified as *Trueperella bernardiae*. Peritoneal fluid cultures grew no organisms but demonstrated many white blood cells and absolute neutrophil count of 419, concerning for secondary bacterial peritonitis. Right pleural catheter was placed to drain the empyema. He then developed a left pleural effusion for which a left pleural catheter was placed and was complicated by a small left pneumothorax. Antibiotics were de-escalated to amoxicillin-clavulanate. Serial chest x-rays showed moderate improvement in the empyema and after right fluid drainage had stopped, the right pleural catheter was removed. He continued oral amoxicillin-clavulanate for 4 weeks and the left catheter remained for continued pleural effusions and he was discharged from the hospital. *Trueperella bernardiae* is a facultative anaerobic gram positive coccobacillus which is a normal part of skin and oral flora. Previous case reports show *Trueperella bernardiae* causing wound and prosthetic joint infections, brain abscesses, and abdominal abscesses post-abdominal surgery. Although ascitic fluid cultures did not grow organisms, the peritoneal fluid analysis and previous case reports demonstrating the growth of this organism after abdominal surgery lead us to believe the organism spread from the abdomen to the thorax after hemicolectomy and heart failure exacerbation. Our patient demonstrates a rare case of *Trueperella bernardiae* causing an empyema which responded to amoxicillin-clavulanate and source control with drainage.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #39

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: El Hussain Shamsa

Additional Authors: Ali Shamsa, Janan Abbas Alkilidar

Conflicting Views on End-of-Life Care Results in Suboptimal Care in an Elderly, Middle Eastern Patient

Introduction:

Ideals of comfort care and less aggressive medical care at the end of life have become increasingly popular in Western medicine. However, these ideals conflict with those of many non-Western cultures which demand aggressive medical care to preserve life. The following case presents the impact of these conflicting views on the medical care of an ill, elderly woman.

Case Presentation:

A 94-year-old Middle Eastern, Muslim, non-English speaking woman with history of COPD, asthma, mild memory disturbances, and recent outpatient pneumonia was transported to the ED with acute hypoxemic respiratory failure. She was intubated and admitted to ICU where a right lower lobe bland mucus plug was removed by bronchoscopy. The patient was successfully extubated but remained on oxygen supplementation throughout an extended hospital stay. Due to fears of aspiration, the patient was kept NPO until the fifth day of admission when bolus nasogastric tube feedings were initiated. Her four-month hospital course was complicated by recurrent aspiration pneumonia, protein malnourishment, pleural effusions, pre-renal azotemia, and an uninvestigated GI bleed resulting in chronic uremia. Despite clear wishes from the patient's son (legal guardian and DPOA) and family to continue aggressive medical care, hospital physicians and staff persistently pushed for the withdrawal of life-preserving measures. The family insisted that the patient's religion and culture obliged them to seek full medical treatment, unless the patient was in a chronic vegetative state. This led to mounting tensions and mistrust between hospital personnel and the patient's family, legal action by the hospital in an attempt to pursue public guardianship of the patient, and the withholding of medical interventions. Following discharge, the patient would be readmitted to the hospital several times until she passed away seven months later due to sudden massive pulmonary hemorrhage—a likely complication of her untreated chronic uremia.

Discussion:

This case highlights a challenging intersection between contemporary Western ideals of a comfortable death, non-Western ideals of the preservation of life at all costs, the appropriateness of pursuing or withdrawing life-preserving measures in an ill, elderly patient, and medical futility. Such a discussion is essential to protecting patient autonomy in end-of-life care.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #40

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Amer Tamr

Additional Authors: Dana Kabbani, Prakash Nallani, Housam Sarakbi, Ilyes Benchaala

A Rare Presentation of CNS Polyarteritis Nodosa in a Patient with Cutaneous PAN

Cutaneous polyarteritis nodosa (CPAN) is a rare form of cutaneous necrotizing vasculitis that involves small and medium-sized arteries of the dermis and subcutaneous tissue. CPAN and polyarteritis nodosa (PAN) are distinct in their clinical course and management (Subbanna et al., 2012). There has been much debate about whether or not CPAN can progress to PAN, with some evidence of extracutaneous manifestations of CPAN, like peripheral neuropathy and myalgia limited to the same area as skin lesions (Furukawa, 2012). A review of the existing literature reveals little evidence of any extracutaneous manifestations and no evidence of neurologic symptoms in CPAN. This case follows a CPAN patient with symptoms not limited to areas with coexisting skin lesions. Our patient is a 31 year old man who presented to the hospital with a one day history of nausea, vomiting, confusion, left leg numbness, tingling, and receptive aphasia. Transradial diagnostic cerebral angiography (DCA) at admission showed a blister aneurysm of the right PICA and dissecting aneurysm of the left vertebral artery. He had lived with asymptomatic cutaneous PAN for 6 years prior to presentation. Patient had no other known medical history and was not taking any medications at presentation. Repeat DCA days later showed persistent and new stenosis of cranial vessels, consistent with vasculitis. No endovascular intervention was done due to risk of stroke, although one dose of methylprednisolone was administered due to high suspicion of neurological manifestation of PAN. High dose steroids were initiated, with plans to start cyclophosphamide due to persistent aneurysm and thus highly suspected vasculitis. However, treatment was held off as the patient was not stable to begin therapy. Hospitalization was complicated by persistent hydrocephalus and pneumonia; at time of submission, the patient had been discharged to a long-term acute care hospital after significant functional decline and failure to reach stability required for cyclophosphamide treatment.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #41

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Ajith Thomas

Additional Authors: Fiona Clowney M.D., Sonika Gill M.D., Abigail Entz M.D.

Beyond the Rash: Shingles as a Sign of Immunodeficiency

Case Description: A 44-year-old woman with history of shingles one year prior presents with abrupt onset vesicular rash of one week duration associated with a burning sensation. On examination, the patient has a mixture of flesh-colored, violaceous lesions crusted over with blackened scabs. The rash involves the left neck, shoulder, chest, and back without crossing midline. The patient is clinically diagnosed with disseminated herpes zoster for having 10+ extradermatomal vesicles. The patient also endorsed odynophagia; examination revealed white plaques scattered on her uvula and posterior pharynx, concerning for esophageal candidiasis. The patient was started on IV acyclovir for disseminated herpes zoster and an antifungal for her esophageal candidiasis. Her last HIV test was 3 years prior, but notably she did not receive an HIV test the previous year during her first case of shingles. Further workup during her hospital stay revealed the patient was both HIV and trichomonas positive. The patient remained inpatient until resolution of her active herpes zoster, and then followed up with an HIV clinic for treatment of her newly diagnosed HIV with AIDS defining illnesses.

Discussion: Herpes zoster, commonly known as shingles, is caused by reactivation of latent varicella-zoster virus which remains dormant in the cranial nerves and dorsal root ganglia. It is typically seen in adults aged 50 years or older who experienced chickenpox in childhood and is usually a once-in-a-lifetime occurrence. Patients who fall outside the typical criteria for developing herpes zoster should thus raise suspicion for an underlying pathology. Recurrent or severe disseminated infections are seen in immunocompromised patients, and these patients should be routinely tested for HIV. Concurrent hematologic or solid malignancies and autoimmune diseases are other significant risk factors for recurrent zoster and should also be kept on the differential for such abnormal cases.

Conclusion: Patients that fall outside the typical etiological presentation of a disease should warrant concern for underlying exacerbating factors. In the case of recurrent or disseminated herpes zoster in individuals under the age of 50, there should be concern for immunocompetency, malignancy, or an autoimmune disease.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #42

Category: Clinical Vignette

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Donovan Wilcox

Additional Authors: Omar Sallam, MD

Postural Tachycardia Syndrome with Concurrent Anxiety and PTSD

Introduction: Postural Tachycardia Syndrome (POTS) is a disorder involving an abnormal autonomic response to upright posture. It has been shown to be frequently associated with primary psychiatric diagnoses. We present a case of POTS in a 22-year-old female with concurrent anxiety and PTSD.

Case Description: Our patient is a 22-year-old female with past medical history of anxiety and PTSD who presented with episodes of presyncope and loss of consciousness. Her symptoms were preceded by lightheadedness and palpitations, all occurring while sitting up or standing. Her medications included venlafaxine 75mg for anxiety, fludrocortisone 0.05mg for persistent orthostasis, and midodrine 10mg three times daily. Midodrine provided some symptomatic relief. Venlafaxine had recently been reduced from 225mg to investigate possible adverse effect. Work up including electrocardiograms and an echocardiogram have been normal. Holter monitor was significant for tachycardia to 178 beats per minute during an episode of presyncope. Brain MRI was normal. Endocrinological work up revealed thyroid stimulating hormone 1.06uIU/mL (0.30 - 5.00), morning cortisol 5.9ug/dL (4.3 - 22.4), and total plasma metanephrines of 197pg/mL (<205). The patient continued to experience a sustained increase in upright heart rate greater than 30 beats/minute within ten minutes of standing, without orthostatic hypotension, as well as new nausea, headaches, and fatigue. Psychiatry service was consulted and believed there may be a component of venlafaxine withdrawal, recommending increasing the dose back to 225mg. This change was implemented, and over a few days the patient's nausea, headaches, and fatigue subsided. Given clinical presentation, she was diagnosed with POTS and her medications were titrated appropriately. Her symptoms improved, and she was discharged to follow up as an outpatient.

Discussion: This case provides an example of POTS in a young female with coexisting psychiatric diagnoses, with the possibility that venlafaxine withdrawal caused acutely worsening symptoms. The frequent correlation of this diagnosis with psychiatric disorders should prompt physicians to consider the patient-specific relationship of the two, and prioritize treatment of both.

Conclusions: POTS is a diagnosis of exclusion in patients with syncopal episodes, and management of concurrent psychiatric conditions is crucial for patient optimization.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #43

Category: Research

School: Wayne State University School of Medicine

Clerkship Director: Diane Levine, MD, FACP

Presenter: Ho Jun Yun

Additional Authors: Honglian Duan, Zhe Cheng, Lipeng Cai, Yanna Tong, Zhenzhen Han, Xiaokun Geng, Yuchuan Ding

Serum Bilirubin After Acute Ischemic Stroke: Bilirubin to Measure Stroke Severity and Prognosis

Objective:

This study investigates relationships between serum bilirubin levels, stroke severity and prognosis of patients with acute ischemic stroke (AIS), to elucidate the role of the liver in AIS.

Methods:

This retrospective study collected data from 527 patients diagnosed with AIS within 24 hours after their symptom onset. Their demographics and laboratory data were collected. Stroke severity was assessed using the National Institutes of Health Stroke Scale (NIHSS). Mild stroke was defined as $NIHSS \leq 5$. Prognosis was assessed with modified Rankin Score (mRS) on 90 days after AIS and good prognosis was defined as $mRS < 3$. The patients were divided based on their total bilirubin (Tbil) and direct bilirubin (Dbil) levels to study these serum markers' association with the severity of stroke. Tbil levels were measured and compared with mRS on 90 days to analyze prognosis of mild stroke patients.

Results:

Both Tbil abnormal ($NIHSS = 6.8 \pm 5.3$) and Dbil abnormal groups ($NIHSS = 7.3 \pm 5.7$) had higher NIHSS on admission, as compared to the normal groups ($p < 0.05$ or $p < 0.01$, respectively). Severity of stroke at discharge was similar on admission ($p = 0.025$ and 0.019 , respectively). A multivariable linear regression showed that serum bilirubin levels were independently associated with stroke severity on admission and discharge after risk factors were adjusted ($p < 0.001$ and $p < 0.05$, respectively); β (95%CI) were 0.116 ($0.064-0.167$) and 0.058 ($0.012-0.103$), respectively. The average Tbil levels of those with mild stroke and good prognosis was $15.1 \pm 6.4 \mu\text{mol/l}$ versus $11.8 \pm 3.1 \mu\text{mol/l}$ with poor prognosis group; this difference was statistically significant ($p = 0.003$). As for Dtil levels, the same difference was observed although it did not reach a significant level.

Conclusion:

High Tbil and Dbil level within 48 hours of symptom onset could be an independent marker of severity of stroke on both admission and discharge for all AIS patients. For patient with mild stroke, elevation of bilirubin after AIS may suggests a good prognosis. These findings imply that the liver play the key roles in the mechanism of AIS.

ACP Michigan Chapter Meeting 2022 - Medical Student Day

Medical Student Poster #44

Category: CQI/EBM

School: Western Michigan University Homer Stryker MD SOM

Clerkship Director: Melissa Olken, MD, FACP

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Quality Improvement (QI) Intervention Seeking to Increase COVID-19 Vaccination Rates Among Unvaccinated Patients Aged 20-64 Year

Introduction: The goal of this study is to determine the effect of a one-time educational intervention on COVID-19 vaccine acceptance in Emergency Department (ED) patients aged 20-64. At the time our QI project was initiated, 55% of the US was fully vaccinated, with 65% having received one dose¹. In our ED population, fully and partially vaccinated rates were lower at 48% and 53% respectively. We hypothesized that a one-on-one educational intervention, where patients could discuss questions/concerns about the COVID-19 vaccine with physicians and medical students, would increase the rate of patients having received the first dose of a COVID-19 vaccine by 10% among our sample of 100 patients.

Methods: Unvaccinated ED patients aged 20 to 64 at Bronson Methodist Hospital were approached and asked if they were willing to discuss COVID vaccines. Consent was obtained, and demographic data collected. Patients were asked about interest in receiving the COVID-19 vaccine and reasons for not doing so. There was then a brief educational intervention/opportunity for the patient to ask questions. Patients are being contacted 4 weeks after their visit to check vaccination status.

Results: We have recruited 17/100 participants to date. The seventeen participants have given 33 reasons for not being vaccinated. The most common reasons were potential side effects of the vaccine (8/33) and believing natural immunity after COVID-19 infection made it unnecessary (5/33). Other concerns included: not knowing what is in the vaccine, false claims such as microchipping, and the vaccine being administered in non-healthcare facilities. Eighty two percent (14/17) of participants would be unwilling to receive the vaccine at time of ED visit.

Conclusion: To date, the intervention has not appeared to increase patient acceptance of COVID-19 vaccine. Recruitment will continue until we reach our target sample size of 100 and obtain 4 week follow-up data to see if patients choose to get vaccinated. As of February 15th, 2022, the vaccine will be available in the ED, so participants willing to obtain a vaccine can do so during their ED visit; however, initial data suggests acceptance rates will be low.

References: [1] US Coronavirus Vaccine Tracker. <https://usafacts.org/visualizations/covid-vaccine-tracker-states/>.