

ACP Michigan Chapter Meeting 2022

Oral# 1

Category: Clinical Vignette

Program: Ascension Macomb Oakland Hospital

Program Director: Benjamin Collins-Hamel, DO

Presenter: Naser Kafeel

Additional Authors: Aye Thet, MD, Hassaan Siddiqui, DO

Hydralazine Induced ANCA Vasculitis Presenting as Abdominal Pain

Introduction: Hydralazine is a widely used medication for the treatment of moderate to severe hypertension and heart failure. It is well known for causing drug induced lupus and ANCA vasculitis with an incidence of approximately 5%-10.4% among patients on hydralazine. Although unclear how hydralazine can cause this autoimmune phenomenon, many mechanisms have been theorized. One hypothesis suggests hydralazine is metabolized by MPO released from neutrophils which results in formation of anti-MPO antibodies. A second hypothesis suggests reversal of epigenetic silencing to MPO and PR3 which results in increased autoantigens to neutrophil. Clinical implications of hydralazine induced vasculitis can result in pulmonary-renal syndrome and can be life threatening. Immediate cessation of the drug followed by immunosuppression and glucocorticoids are the mainstay of treatment.

Case Presentation: We present a case of a 60 year old female who presented with acute abdominal pain. She was found to have severe oliguric acute kidney injury. Work up with lab and imaging revealed positive myeloperoxidase antibody, histone IgG antibody, and low complement level consistent with glomerulonephritis. Kidney biopsy demonstrated crescentic glomerulonephritis linked with p-ANCA, consistent with drug induced glomerulonephritis. Review of her home medications revealed chronic hydralazine and levetiracetam use which may have been the culprit, and were subsequently discontinued. She required three cycles of conventional hemodialysis and was started on rituximab, four doses weekly in addition to prednisone and bactrim for PCP prophylaxis. Her kidney function improved over the course of her admission and the patient was off dialysis. She was discharged and required additional rituximab outpatient for maintenance dosing.

Discussion: Hydralazine induced vasculitis is a rare phenomenon occurring approximately between 5%-10.4% of those taking the medication. Patients typically present with acute renal failure, arthralgias, myalgias, nephritis, and CNS involvement such as confusion. Hydralazine induced glomerulonephritis should be part of a differential diagnosis when patients on hydralazine present with acute renal failure. Hydralazine should be discontinued promptly and kidney biopsy should be obtained followed by initiating immunosuppression therapy and glucocorticoids. Failure to diagnose and treat hydralazine induced vasculitis can lead to adverse events such as pulmonary-renal syndrome and even death. Therefore, prompt discontinuation of hydralazine is the most critical step.

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Oral# 2

Category: Clinical Vignette

Program: Ascension St. John Hospital - Grosse Pointe

Program Director: Raymond Hilu, MD, FACP

Presenter: Mohamed Issa

Additional Authors: Issa Mohamed, MD, Arabo Rami, MD, Fozo Paul, MD

Squamous Cell Carcinoma Associated Tracheobronchial Amyloidosis with Amyloidoma Formation

Introduction: Amyloidosis is a rare multi-system disease characterized by abnormal extracellular protein deposition within different body organs. Tracheobronchial amyloidosis is an uncommon localized form of amyloidosis with deposits affecting the trachea and bronchi. These forms of fibrillar aggregates can localize further to form tumor-like lesions called amyloidoma. In this clinical vignette, we describe a patient with a newly diagnosed squamous cell carcinoma with tracheobronchial amyloidosis and amyloidoma formation.

Case Presentation: A 63-year old male with a history of prolonged tobacco use presented to the hospital due to body aches, fatigue, fever, and productive cough. Initially, the patient was breathing at room air after which he desaturated quickly to high 80s requiring oxygen support with 2 liters. His Lab work up showed a low total leukocyte count with unremarkable basic metabolic panel and a negative Covid-19 test. Chest x-ray showed bilateral lung infiltrates with a focal consolidation in the left lower lobe. Chest CT scan showed left lower lobe clustered thick-walled air-filled pulmonary cavities measuring 4.9x2.8 cm, with diffuse emphysematous changes, right main endobronchial polypoid mass lesion measuring 10.3x7.2 mm and right upper lobe nodule. A Bronchoalveolar lavage showed acellular apple-green, congo-red birefringence materials consistent with tracheobronchial amyloidosis from right lung fluid aspirates and atypical epithelial cells from left lung fluid aspirated. Bronchoscopy for right endobronchial mass excision and fine needle aspiration and biopsy of the left lower lobe cavitory lesions and mediastinal lymph nodes were done. Pathology report showed left lower lobe squamous cell carcinoma with lymph node metastasis and right bronchial amyloidoma. Patient was found to have stage III squamous cell cancer and started on chemoradiation cycles with maintenance immunotherapy.

Discussion: There is an uncommon association of tracheobronchial amyloidosis with amyloidoma formation with primary lung cancer. The chronic inflammatory process associated with lung cancer, specifically squamous cell type produce amyloid A proteins that accumulate and cause end organ damage. This patient did not show kidney dysfunction or nephrotic syndrome which are frequent findings after years of diagnosis. Amyloidosis is usually infrequent but it could be an associated pathology in patients with squamous cell lung cancer.

ACP Michigan Chapter Meeting 2022

Oral# 3

Category: Clinical Vignette

Program: Ascension St. John Hospital - Grosse Pointe

Program Director: Raymond Hilu, MD, FACP

Presenter: Sajithaa Varadarasa

Additional Authors: Freny Sebastian, M.D., Jordan Swisher, D.O., Antonious Attallah, M.D. F.A.C.C.

A Rare Case of Papillary Muscle Rupture in a Late Presenting Inferior Myocardial Infarction

Introduction:

Papillary muscle rupture is a rare mechanical complication of acute inferior wall myocardial infarction. In fact, it only occurs in 0.05%-1% of acute inferior wall myocardial infarctions. Early diagnosis and surgical intervention are critical in reducing mortality.

Case:

An 83-year-old female with a past medical history of hypertension, type II diabetes mellitus, hyperlipidemia and prior TIA presented to the hospital with shortness of breath. The patient had been feeling unwell with generalized weakness, nausea and vomiting for the past few days. She was also having significant fatigue and episodes of diaphoresis. She developed acute shortness of breath on the day of presentation. She denied dizziness, chest pain, palpitations, lower extremity edema, and fainting. On presentation, the patient was hypotensive at 83/57 mm Hg, HR was in the low 40-50s bpm, she was saturating 98% on room air and afebrile. An EKG was obtained and showed a heart rate of 42, sinus rhythm, shortened PR interval and ST segment elevations in lead II, III, aVF with reciprocal changes in lead I and aVL. Troponin-T was 1.1 ng/mL and lactic acid was 6.2 mmol/L. On physical exam, she was cool to touch with signs of central cyanosis developing. There was no appreciable cardiac murmur. At that time, there were concerns for cardiogenic shock. A bedside echocardiography revealed severe mitral valve regurgitation with a large ruptured head of a papillary muscle. This was later confirmed with formal transthoracic echocardiography. Patient underwent emergent cardiac catheterization which revealed moderate diffuse disease in the left anterior descending artery and left circumflex artery with a 100% occlusion of the right coronary artery. She was subsequently placed on an intra-aortic balloon pump and ultimately underwent emergent mitral valve replacement.

Discussion:

Papillary muscle rupture remains one of the most catastrophic complications of inferior wall myocardial infarction. Papillary muscle rupture results in acute, severe mitral regurgitation and can lead to life-threatening cardiogenic shock. Once the diagnosis is confirmed, immediate surgical intervention with mitral valve replacement is essential to prevent fatal hemodynamic deterioration.

ACP Michigan Chapter Meeting 2022

Oral# 4

Category: Research

Program: Ascension Providence Hospital

Program Director: Samira Ahsan, MD, FACP

Presenter: Brittnei McClellan

Additional Authors: Brittnei McClellan, MD, Cameron Whitler, DO, Harshil Patel, MD, Dhruv Rajpurohit, DO, Frank Kalaba, MD, Herman Kado, MD

Improved Left Atrial Appendage Occlusion Procedural Efficiency Using Radiofrequency Transseptal Wire System

Introduction: Multiple wire and sheath exchanges result in longer procedure times potentially leading to increased radiation exposure and complications. This study investigates the use of the VersaCross radiofrequency (VCRF) transseptal wire system to improve overall efficiency of left atrial appendage closure (LAAC) compared to the standard RF needle-based workflow.

Methods: LAAC using the WATCHMAN FLX device was performed using a needle-based workflow (NRG RF needle, Baylis; 8.5F SL1 sheath, Abbott; ProTrack pigtail wire, Baylis) or VCRF system (RF pigtail wire, dedicated 8.5F sheath) under fluoroscopy and TEE guidance. Cases in the needle group were performed as per usual protocol. In the VCRF group, the VCRF pigtail wire was used for vascular access, transseptal puncture (TSP) and for exchanging the WATCHMAN sheath into the LA; depending on LAA anatomy, VCRF was also used for direct access, contrast injection and sheath exchange into the LAA. Cases were performed consecutively, and procedural characteristics were retrospectively compared between the two groups. The primary endpoint was procedural efficiency determined by time to final implant release. Secondary endpoints were time to TSP puncture, LAAC success, fluoroscopy use and procedural complications.

Results: A total of 84 patients underwent LAAC using the VCRF system (54) or standard workflow (30). Both groups had similar baseline characteristics. All procedures were successful, with no intraprocedural complications. TSP time was similar between VCRF and standard RF needle-based workflow (6.6 ± 2.3 min vs. 7.4 ± 2.5 min, respectively; $p=0.16$). Time to final implant release was 3.9 min (13%) faster in the VCRF group ($p=0.03$). There was no difference in overall fluoroscopy time between VCRF and the needle workflow (7.7 ± 2.8 min vs. 9.0 ± 4.3 min, respectively; $p=0.11$); however, fluoroscopy dose was 67% lower with VCRF ($p=0.006$).

Conclusions: TSP using a RF wire is similar to a RF needle, but overall procedural efficiency is improved using the RF wire-based system. VCRF decreased the time to implant release by reducing the number of exchanges in the LA and enabling more optimized sheath delivery into the LAA. Better visualization of this system likely leads to a reduced fluoroscopy dose.

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Oral# 5

Category: Clinical Vignette

Program: Beaumont Hospital - Royal Oak

Program Director: Sandor Shoichet, MD, FACP

Presenter: Bipin Ghimire

Additional Authors: Ashbina Pokharel, MBBS; Samiksha Pandey, MBBS; Ujjwal Jung Karki, MBBS; Can Wang, MB; Michael Stender, MD

Hepatoid Adenocarcinoma of Lung: A Rare and Challenging Tumor

Hepatoid adenocarcinoma (HAC) is an extremely rare extra-hepatic malignant tumor having hepatic features on pathology. Stomach is the most common site, and hepatoid adenocarcinoma of lung (HAL) accounts for 2.3 – 5% of all HACs. Less than 100 cases of HAL have been reported worldwide since its concept was put forward in 1990.

A 63-year-old female presented to the ED with back pain. Initial evaluation revealed anemia (hemoglobin 6.7), hypercalcemia (12.1 mg/dl), GFR 54 mL/min. X-ray thoracic spine and chest showed two vertebral compression deformities and lytic lesions on multiple ribs. Initially, multiple myeloma was considered likely but further evaluation only showed IgA lambda monoclonal gammopathy of 0.2g/dl. MRI thoracic spine done for further characterization of the vertebral deformities showed multiple abnormally enhancing lesions concerning for metastatic disease. CT chest/abdomen/pelvis revealed left perihilar lung mass measuring 5.1cm, numerous mediastinal and supraclavicular lymph nodes, and diffuse osseous and adrenal metastases. She then underwent bone marrow showing <10 % plasma cells, favoring MGUS, and evidence of metastatic carcinoma. Concurrently done supraclavicular lymph node biopsy exhibited evidence of poorly differentiated carcinoma. Immunohistochemistry was positive for Hep-par-1 suggesting hepatic origin but was negative for arginase, glypican-3, and WT1 arguing against primary hepatocellular malignancy. With large lung mass, lack of liver lesions, presence of adrenal metastases, and immunohistochemistry results, diagnosis of HAL was made. Serum AFP level however was normal. With advanced disease, the patient declined treatment and was enrolled in hospice.

HAL is extremely rare, and tumor characteristics, prognosis, treatment strategies have been proposed based only on a few retrospective studies. It is diagnosed with presence of both adenoid and hepatocyte-like differentiation either on pathology or immunohistochemistry. Its diagnosis can be challenging based on morphology alone, especially if poorly differentiated as in our patient. So, immunohistochemistry is the cornerstone for accurate diagnosis. Elevated serum AFP is seen in a majority of cases and is a poor prognostic indicator, but as in our case, it is not required for diagnosis. It is a rapidly growing carcinoma with a poor prognosis, so early intervention is essential to reduce the tumor burden and complications of enlarging lung mass.

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Oral# 6

Category: Clinical Vignette

Program: Beaumont Hospital - Royal Oak

Program Director: Sandor Shoichet, MD, FACP

Presenter: Lauren Reinhold

Additional Authors: Simon R. Dixon, MBChB, Carl B. Lauter, M.D.

Recurrent Myopericarditis Following mRNA-1273 SARS-CoV-2 Vaccination in a Patient with Previous SARS-CoV-2 Myopericarditis

Introduction:

Coronavirus disease (COVID-19) caused by SARS-CoV-2 infection has been associated with myocarditis. The novel mRNA vaccines, BNT162b2 and mRNA-1273, that encode the SARS-CoV-2 spike glycoprotein have shown to be a safe combatant to the pandemic. Myocarditis has become a rare, newly recognized complication of the SARS-CoV-2 mRNA vaccinations. The mechanism remains unknown, but multiple have been proposed.

Case description:

A 24-year-old healthy Caucasian female presented to the hospital with acute chest pain. The patient received her first dose of mRNA-1273 SARS-CoV-2 vaccine two days prior to onset of symptoms. She reported sharp mid-sternal chest pain worse with inspiration and associated mild dyspnea. She reported possible SARS-CoV-2 infection one year prior which was associated with identical symptoms, although she was also febrile at that time. Upon current presentation, she was afebrile with stable vital signs. Nasopharyngeal swab testing for SARS-CoV-2 was negative. She had positive IgG (Anti-Nucleocapsid), confirming prior SARS-CoV-2 infection, and positive SARS-CoV-2 IgG (Anti-Spike). Other work up was significant for an elevated troponin I of 4.5 ng/mL (normal ≤ 0.03 ng/mL), elevated CRP of 56, normal ESR, normal CBC, normal D-dimer, and normal BNP. ECG demonstrated normal sinus rhythm with slight ST-segment elevation and T-wave inversion in V2, but no PR-segment depression. A transthoracic echocardiogram demonstrated normal left ventricular systolic function with minimal pericardial effusion. Physical exam was unremarkable. She was diagnosed with acute myopericarditis and treated with colchicine 0.6 mg daily and ibuprofen 800mg every 8 hours. She was advised to not obtain the second vaccination dose of mRNA-1273 SARS-CoV-2. A follow up cardiac MRI one week later did not demonstrate evidence of myocardial scarring or residual inflammation, and troponin had normalized.

Discussion:

We believe this case of myopericarditis recurrence in a patient with prior SARS-CoV-2 myopericarditis suggests an immune reactivation through antigen re-exposure with the SARS-CoV-2 mRNA vaccine. This case highlights the importance of further monitoring of complications and need for continued research in the use of mRNA and their safety for vaccinations and therapies.

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Oral# 7

Category: Clinical Vignette

Program: Beaumont Hospital - Royal Oak

Program Director: Sandor Shoichet, MD, FACP

Presenter: Markie Zimmer

Additional Authors: Hazem Alakhras, Daniel Misra, Sara Aguinaga

AML: A Real Pain in the Sacrum

A 60 year old previously healthy female presented for evaluation of a painful sacral decubitus ulcer. In the initial workup, CBC showed leukocytosis of 51 with a monocytic differentiation and 55% blasts, macrocytic anemia of 4.6 Hgb, and thrombocytopenia of 32. She denied any classic B-type symptoms, but did have four days of fatigue and chronic night sweats, previously attributed to menopause.

She had no evidence of bleeding, and was transfused appropriately, but had ongoing severe thrombocytopenia. Oncology was consulted and bone marrow biopsy confirmed the diagnosis of acute myeloid leukemia with monocytic differentiation. After initiation of antibiotic therapy for her sacral wound, she was started on 7+3 chemotherapy. During treatment, she suffered from pancytopenia, and interestingly developed fever and chills with platelet transfusion. She was attempted to be treated with IVIG for concern of post transfusion purpura, but again had fevers and chills. She ultimately stabilized with HLA-matched platelets. The remainder of her course was notable for diarrhea and bloody stools, febrile neutropenia and bacteremia. Ultimately, she was no longer transfusion dependent and repeat bone marrow biopsy showed remission with blasts down to 1%, allowing the patient to be assessed for a bone marrow transplant.

There are several important tenants underlined in this case. First, the importance of consideration for factors contributing to poor wound healing, as well as the importance of obtaining a differential to accompany a marked CBC abnormality. From a Hematologic perspective, this case describes AML with monocytic differentiation, as well as complications such as febrile neutropenia, pancytopenia and concern for the under-recognized post-transfusion purpura. In total, this case highlights the need for multidisciplinary care of such medically complex patients.

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Oral# 8

Category: Research

Program: Henry Ford Hospital - Detroit

Program Director: Odaliz Abreu Lanfranco, MD, FACP

Presenter: Renato Cerna Viacava

Additional Authors: Kartik Gupta, MD; Michelle Jesse, PhD

Trends in Patient-Recalled Targets for Cardiovascular Risk Factors in Ambulatory US Adults with Diabetes Mellitus

Introduction: Since 2010, there has been a decrease in blood pressure (BP) and glycemic control in patients with diabetes mellitus. Current guidelines recommend a patient-centered team care for decision making and goal setting. This study was conducted to estimate the proportion of patients with diabetes mellitus, who recalled individual target discussions with their health care providers.

Methods: We used 4 cycles of the National Health and Nutrition Examination Survey (NHANES) performed in adults older than 20 years with diagnosed diabetes mellitus. The primary outcome was to assess the proportion of respondents who recalled any glycated hemoglobin (HbA1c), BP target, or low-density lipoprotein-cholesterol (LDL-C) target across the 4 time cycles. The secondary outcome was to assess factors associated with recalling any HbA1c target such as age, gender, race, education, insurance, family income-to-poverty ratio, current HbA1c, diabetes mellitus duration, and if insulin treatment was present. Chi-square test was used to compare the group proportions between surveys.

Results: Mean age was 60 years, most respondents were non-Hispanic Whites, and female gender constituted approximately 50% of the population. Most respondents had more than 1 office visit in the preceding year. More than 80% of respondents in each survey cycle reported a provider-specific glycemic target. Response for BP target was available in 82.7% of respondents, with an approximate of 50% in each survey cycle, and a subsequent increase across survey cycles. Response for LDL-C target was available in 47.3% of respondents, with a subsequent decrease in the proportion from 40.5% in 2011 to 2012, to 28.9% in 2017 to 2020. In the multivariable model, younger age, higher education status, higher family income-to-poverty ratio, higher current HbA1c, and current insulin treatment were significantly associated with recalling a provider-specific glycemic target.

Conclusions: More than 80% of patients with diabetes mellitus recalled a glycemic target, but there was a high proportion of respondents who did not recall any BP or LDL-C target despite a high frequency of contact with their health care providers. Efforts are needed to understand the drivers of this findings and to improve patient understanding of comprehensive risk factor management in diabetes mellitus.

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Oral# 9

Category: Clinical Vignette

Program: Henry Ford Macomb

Program Director: Amitha Aravapally, MD, FACP

Presenter: Sirisha Sakhamuru

Additional Authors: Vamshi Vadlapatla, MD, Syed Ali Muttaqi Husain, MD

Granulomatosis with Polyangiitis or Coronavirus 19 Pneumonia? A Diagnostic Dilemma

Granulomatosis with Polyangiitis (GPA) and Coronavirus 19 disease (COVID-19) can both present with symptoms of dyspnea and similar imaging findings. This case demonstrates the diagnostic challenge of differentiating GPA from COVID-19 during the current COVID-19 pandemic.

A 65-year-old woman with no past medical history and occupational exposure to COVID-19 presented to the hospital for shortness of breath and nasal congestion. She had fever without hypoxia, and chest x-ray showed diffuse bilateral interstitial infiltrates. She was subsequently tested for COVID-19 twice with PCR, which was negative both times. Despite this, due to the current pandemic and imaging findings, the test was considered a false negative and a diagnosis of multifocal pneumonia likely secondary to COVID-19 was made. She was discharged on oral prednisone.

Immediately after completing the steroids, she presented to the hospital again for shortness of breath and cough. She had initially felt better after discharge, but quickly worsened after completing the prednisone regimen. She again was COVID-19 PCR negative, and a COVID-19 IgG titer was also negative. She required escalating oxygen requirements up to non-rebreather and CT Chest showed diffuse pulmonary ground-glass opacities. Pulmonology suspected an alternative viral pneumonia as the etiology, however a viral respiratory panel and respiratory cultures were negative. Also, her hemoglobin down trended from 9.4 to 5.6, without any evidence of blood loss. She received blood transfusions with appropriate hemoglobin response. Given her worsening respiratory status, bronchoscopy with bronchoalveolar lavage was performed, showing diffuse endobronchial mucosal inflammation and diffuse alveolar hemorrhage. Subsequently, a rheumatological work up was positive for C-ANCA with anti-PR3 titers >1:320, and a presumptive diagnosis of GPA was made. She was started on high dose IV methylprednisolone, with improved oxygen requirements to 4 liters, and was discharged on a steroid taper with a plan to start rituximab outpatient and follow-up with pulmonology and rheumatology for further care.

This case demonstrates the diagnostic challenge of differentiating new-onset GPA from COVID-19—more so amid the COVID-19 pandemic when anchoring bias is difficult to overcome. The timely recognition of GPA is critical to prevent delay in instituting appropriate therapy, delay in diagnosis and irreversible complications.

Oral# 10

Category: Clinical Vignette

Program: DMC Sinai-Grace

Program Director: Mohamed Siddique, MD, FACP

Presenter: Ahmed K Abdelrahman

Additional Authors: Yasir Alsaraf, MD; Rana Ismail, PhD, MSc; Wasif Hafeez, MD, FACP; Malitha Hettiarachchi, MD, FACP.

Lobar Consolidation as a Rare Radiologic Manifestation of Pulmonary MAC-Mycobacterium Avium Complex: Case Report

Introduction:

Mycobacterium avium complex (MAC) is a bacterium that generally resides in dust, soil, and water. It can cause severe lung infection, especially in immunocompromised individuals or those with pre-existing lung conditions such as COPD, bronchiectasis, cystic fibrosis, or previous tuberculosis-TB infection. MAC represents 80% of nontuberculous mycobacterial lung infections in the US.

Case Description:

A 96-year-old man was admitted for shortness of breath and wheezing for five days. He was afebrile, hypoxic with 74% oxygen saturation on room air, and coughed with blood-tinged sputum. CXR showed multilobar consolidation. COVID-19 PCR, Influenza A&B rapid tests were negative. CBC was unremarkable, with a WBC count=8300 /microliter (lymphopenia 700/ microliter). CT-PE was negative for pulmonary embolism but revealed extensive bilateral pulmonary consolidations with patchy and ground glass airspace opacities predominantly in the upper lung fields with a small pleural effusion on the right, and moderate cardiomegaly and right-atrial dilatation. He was placed on 15L oxygen via a nonrebreather mask and received Albuterol/ipratropium, Methylprednisone (then prednisone 50mg for six days) for acute COPD exacerbation in addition to a 7-days course of ceftriaxone and doxycycline for pneumonia; and Torsemide for volume overload, as his echocardiogram suggested diastolic heart failure. 2-sputum acid-fast bacilli was done (as patient is an immigrant from Jamaica) and ruled-out pulmonary tuberculosis, however detected MAC. No detection of fibrocavitary or nodular bronchiectasis in repeated-CXR or CT. Patient was eventually discharged home on 2L oxygen via nasal cannula, Clarithromycin 500 mg daily and Ethambutol 15mg/kg/day for one year duration.

Discussion:

Pulmonary MAC infections present with either nodule bronchiectasis or fibrocavitary radiological pattern. It is uncommon to report lobar consolidation as the primary radiological manifestation of MAC without either nodular bronchiectasis or fibrocavitary lesions. In our case, there was no evidence of nodular bronchiectasis or fibrocavitary lesions on repeated-CXR or CT; CT-PE was negative. We ruled out other lung infections like TB, Legionnaire's, strep-pneumoniae, COVID-19, and flu. This case presents a rare radiologic finding for patients with pulmonary MAC presenting with lobar lung consolidations not associated with the typical diagnostic radiological patterns of fibrocavitary lesions or nodular bronchiectasis. Macrolides-based treatment is the mainstay.

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Oral# 11

Category: Research

Program: DMC Sinai-Grace

Program Director: Mohamed Siddique, MD, FACP

Presenter: Sifullah Bashar

Additional Authors: Hassan Cheema, MD; Javardo McIntosh, MD; Rana Ismail, PhD, MSc; Mohamed Siddique, MD, FACP

Revisiting Vitamin-K1 Administration Route: The Shortest Detour to Warfarin Reversal

Introduction: Vitamin-K1 reverses the effect of Coumadin/warfarin and enhances INR management to keep it within a normal therapeutic range. The reversing process could begin within 6-12 hours, but we reviewed the literature to evaluate INR rates post-reversal with vitamin-K administration by different routes and dosages.

Methods: We performed a literature search on PubMed and Google Scholar using a combination of these keywords: "Vitamin-K administration route," "Coumadin Reversal," and "excessive anticoagulation." We evaluated 18 studies, including randomized control trials-RCTs and retrospective studies.

Results: One RCT found that in-patients treated with Coumadin with INR >6.0 (n=55) received vitamin-K either subcutaneous (n=33 mean INR=8.4) or intravenous-IV (n=22, mean INR 7.9). Post-reversal INR values were determined at 24 and 72 hours; the results revealed that 95% of patients who received IV-Vitamin-K achieved INR<5 at 24 hours compared to only 45% in subcutaneous vitamin-K. At 72 hours, INR dropped below 5 for all patients. Another RCT enrolled 23 patients with INR>5 (without bleeding) and randomly assigned them to two groups: A and B. Group-A (n=12; mean INR=6.14) discontinued Coumadin for one day, and group-B (n=11; mean INR=5.82) received oral vitamin-K (2.0mg) besides their usual Coumadin dosage. Within 24 hours, 58% in group-A achieved INR<5.0 versus 100% in group B. A retrospective study (n=32) compared the efficacy of three different vitamin-K routes and doses on warfarin reversal: 0.5-10mg intravenously, 1-10mg subcutaneously, and 2.5 or 5mg orally. Patients got assigned to four groups: low-dose-LDIV (0.5mg or less), high-dose-HDIV (1-10mg), subcutaneous and oral treatment. 100% of patients in HDIV witnessed a reduction in mean INR to below 5.0 within 24-48 hours after receiving 4.2mg IV vitamin-K, making it the most effective route of administration. In comparison, the subcutaneous route was less effective, with 70% experiencing a drop in mean INR<5 within 24-48 hours after receiving 2.5mg mean dose of vitamin-K.

Discussion: Besides dose and route, baseline INR influences vitamin-K efficacy in achieving Coumadin/warfarin reversal. High doses of IV-vitamin-K correlated with faster INR reversal. However, current guidelines (2012) support using low-dose oral vitamin-K (2.5-5mg) for INR 4-10 without evidence of bleeding and high-dose IV-vitamin-K (5-10mg) in cases of bleeding.

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Oral# 12

Category: Research

Program: DMC Sinai-Grace

Program Director: Mohamed Siddique, MD, FACP

Presenter: Saliha Erdem

Additional Authors: Pratibha Singla, MD; Sana Iqbal, MD; Rana Ismail, PhD, MSc.

Fluvoxamine as a Treatment for COVID-19: Promising or Convincing Evidence?

Introduction: Fluvoxamine might have a potential therapeutic role in treating Covid-19. It is a serotonin reuptake inhibitor (SSRI) and stimulates the σ -1 receptor (S1R), which modulates anti-inflammatory responses against cytokines triggered in Covid-19.[1,2]

Methods: We performed a literature search on PubMed and NIH Guidelines using these keywords: "Fluvoxamine," "Covid-19 treatment." We evaluated 10 studies, including randomized clinical trials-RCTs, systematic reviews, and observational studies.

Results: According to the pivotal TOGETHER RCT (N=1497), fluvoxamine (100mg bid for ten days) reduced the risk of hospitalization by 32% (equivalent to ARR=5%; NNT~20) in early diagnosed high-risk Covid-19 patients compared to placebo in outpatient settings. They defined hospitalization as either presenting to ED with Covid-related respiratory deterioration or transferring to a tertiary hospital.[3,4]. STOP-COVID, a double-blinded RCT, showed that patients treated with fluvoxamine (100mg up to 3X daily) had a lower risk for clinical deterioration than placebo beyond two weeks, provided taking fluvoxamine within seven days of symptoms onset. [4-7] A real-world observational study for early Covid-19 treatment demonstrated that patients receiving fluvoxamine (n=65) had no hospital admission at 14 days versus a 12.5% (n=48) incidence of hospitalization in the observation group. Also, patients on fluvoxamine had no ongoing symptoms by day-14. [4,7,8] A recent retrospective cohort study showed that patients treated with SSRIs, including fluvoxamine, had a lower mortality rate compared to their matched untreated control patients with Covid-19. [4,9]

Discussion: Per NIH Guidelines for Covid-19 treatment, fluvoxamine failed to reduce the incidence of Covid-19-related hospitalization alone, mortality, or time to symptom resolution in TOGETHER trial. These were secondary endpoints, but the Trial met its primary endpoint. Also, the NIH deemed the STOP-COVID Trial inconclusive, given the significant limitations, including small sample size, remote assessment of patients, and excluding patients with severe underlying cardio-pulmonary diseases.[10] Fluvoxamine's mechanism of action remains promising as an S1R agonist that enables down-regulation of cytokines and inflammatory factors; also, SSRI, it promotes serotonin availability to the brain and regulates neuropsychiatric functioning with potential for long-Covid aftermath. The jury is still out as more clinical trials are underway to test the biologic plausibility of fluvoxamine's efficacy in Covid-19 and long-Covid-19.

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Oral# 13

Category: Research

Program: DMC Sinai-Grace

Program Director: Mohamed Siddique, MD, FACP

Presenter: Maryam Haider

Additional Authors: Paul Naylor, Milton Mutchnick, Kelly Thomas, Rana Ismail, Ahmed J Chaudhary

Inpatient Mortality of Hepatorenal Syndrome: Renal Replacement Therapy vs Trans Jugular Intrahepatic Portosystemic Shunting

Introduction:

Hepatorenal syndrome (HRS) is a complication of end stage renal failure in patients with advanced liver disease. Liver transplant (LT) remains the only definitive treatment for hepatorenal syndrome. The initiation of renal replacement therapy (RRT) in patients with HRS remains controversial and has extremely high mortality rates. We aimed to compare inpatient mortality of TIPS Vs. RRT and analyze their demographic disparities in HRS patients.

Methods:

The National Inpatient Sample (NIS) database was queried for patients identified with HRS. We used ICD-10 procedure codes to identify TIPS, RRT and LT in HRS patients. The logistic regression is used to compare the interaction of TIPS/RRT with age group, gender, and race on the mortality of the HRS patients. Statistically analysis is performed in SAS and RStudio 1.4.

Results:

We identified 133,560 patients with HRS, the majority of whom were not treated with LT, TPS or RRT (75%). If treated most received RRT (25350 (18.98%) as compared to (LT=4675 (3.5%) and TIPS =1510 (1.13%). The mortality of HRS patients was 26.97%, with improvement with TIPS (21.85%), and LT (4.06%) as compared to poorer outcome with RRT (33.25%). Overall inpatient mortality was 13% lower in females compared to males and white race has lower mortality compared to black race (15%). With respect to treatment RRT cause a 24% increase in female mortality as compared to males (OR, 1.24; 90% CI, 1.14– 1.35; $p < 0.05$), and TIPS cause a 30% decrease in female mortality as compared to males (OR, 0.70; 90% CI, 0.49 – 0.98; $p < 0.05$). In terms of age, compared to the reference group (patients aged between 18 and 44), the inpatient mortality of patients aged between 45 and 64 was 50% more with RRT and 40 % lesser with TIPS. All these results were statistically significant.

Conclusion:

The overall inpatient mortality analysis for bridging therapy favors TIPS compared to renal replacement therapy in patients admitted with Hepatorenal syndrome. Females, the white race, and patients aged between 45 and 64 showed favorable results for TIPS.

ACP Michigan Chapter Meeting 2022

Oral# 14

Category: Research

Program: DMC Sinai-Grace

Program Director: Mohamed Siddique, MD, FACP

Presenter: Feng Zhu

Additional Authors: Lakshmi Bhavani Potluri, MD; Javardo McIntosh, MD; Marc Feldman, MD, FACP; Rana Ismail, PhD, MSc

Is the Risk of PE Higher in Patients with Acute Exacerbation of COPD and Do They Need Longer Duration of Anticoagulation?

Introduction:

COPD affects 5%-9% of the US population and is the fourth leading cause of death, but ranks 3d worldwide responsible for >3 million deaths yearly. The annual estimated direct costs of COPD in the US are \$32 billion, of which acute exacerbations of COPD (AE-COPD) account for the most. However, in COPD patients, the risk of pulmonary embolism (PE) is understudied, and the optimal duration of anticoagulation in those with COPD and PE is also unclear.

Methods:

We performed a literature search on Pubmed, Cochrane, and Embase, using the keywords "COPD," "COPD exacerbation," "Pulmonary embolism," and identified 13 articles after 2010 that included multicenter cross-sectional studies, prospective studies, and meta-analyses- and identified one ongoing RCT.

Results:

Ten retrospective studies reported the prevalence of PE in patients admitted with AE-COPD to be between 5.9-33%. In AE-COPD patients, dyspnea, pleuritic chest pain, increased heart rates, and prolonged hospital stay significantly correlated with PE. Multiple studies indicated that obesity, recent immobilization, elevated D-dimer levels, lower limb edema, and older age were independent risk factors for PE in patients with AE-COPD. The AE-COPD in patients with PE groups showed an increased risk of fatal outcome than the non-PE AE-COPD group in a meta-analysis of 17 studies involving 3170 patients. There is no data regarding the optimal duration of anticoagulation for PE in patients with AE-COPD. An ongoing RCT including 392 participants aims to evaluate the benefit of prolonged anticoagulation of more than three months versus three months duration in AE-COPD patients diagnosed with PE, and results have not been published yet.

Conclusion:

The prevalence of PE is significantly high in patients with COPD exacerbations. The suspicion of PE should be high in patients with unexplained AE-COPD, especially if they have other contributing risk factors and present with pleuritic chest pain and signs of cardiac failure, with no clear infectious origin. This increased prevalence may often leave the clinician with the dilemma of deciding the duration of anticoagulation. However, there is no consensus on the benefit of prolonged anticoagulation duration for PE in patients with COPD exacerbations compared to the standard 3-6 month anticoagulation.

ACP Michigan Chapter Meeting 2022

Oral# 15

Category: Research

Program: McLaren Regional Medical Center/MSU

Program Director: Parul Sud, MBBS, FACP

Presenter: Rohit Rauniyar

Additional Authors: Shikha Yadav, Nischit Baral, Govinda Adhikari, Calvin Ghimire, Arvind Kunadi

Outcome of STEMI Patients in Sickle Cell Disease Status: A Retrospective Cohort Study from National Inpatient Sample 2016-2019

Patients with sickle cell disease (SCD) are at an increased risk of complications secondary to microvascular occlusion. ST-elevation Myocardial Infarction (STEMI) is a rare but serious complication in SCD patients. We observed the relationship between SCD and outcomes in patients primarily hospitalized for STEMI. We did a retrospective cohort study from index STEMI hospitalizations between January 1, 2016, and December 31, 2019, using the 2016–2019 National Inpatient Sample (NIS), including patients 18 years or older, with STEMI as a primary diagnosis for hospitalization and with valid information on SCD status using ICD 10 codes validated in previous studies. The outcomes were in-hospital mortality and length of stay (LOS). Confounders such as age, sex, race, year, insurance, income, SOT status, and comorbidities were adjusted using multivariable regression analysis after univariate and bivariate analysis. STATA 17.0 (Stata-Corp LP, College Station, TX) was used for data analysis. There were 138,286 primary hospitalizations for STEMI, of which 0.02% (n = 22) had SCD. SCD patients with STEMI were younger (mean age: 56.4 years vs. 63.55 years; $P < 0.01$), were more Black (75% had SCD; $p < 0.01$), and were more on Medicaid (30% in SCD vs. 10% in non-SCD; $p = 0.08$). They had a comparable Charlson-comorbidity-index (CCI) of 3 (36.36% in SCD vs. 35.65% in non-SCD; $p = 1$). There was increased mortality in females (aOR: 1.13; 95% CI: 1.08-1.18; $p < 0.01$), Blacks (aOR: 1.13; 95% CI: 1.04-1.22; $p < 0.01$), and the Asians (aOR: 1.23; CI: 1.09-1.39; $p < 0.01$). There was no statistically significant change in in-hospital mortality among SCD patients with STEMI (aOR= 0.77; 95% CI: 0.088-6.80; $p = 0.82$) after controlling for age, sex, race, hospital-region, hospital-teaching status, insurance status, and CCI. There was no statistically significant change in the length of hospital stay (mean hospital stay in SCD patients with STEMI: 5.04 days; SD: 7.3; 95% CI: 1.802–8.28) compared to non-SCD (mean hospital stay: 4.02 days; SD: 5.4; 95% CI: 0.99–4.05) after adjusting for important confounders.

ACP Michigan Chapter Meeting 2022

Oral# 16

Category: Clinical Vignette

Program: St Mary Mercy Hospital

Program Director: David Steinberger, MD, FACP

Presenter: Abdulbaset Salim

Additional Authors: Bamford, Brad OMS III; Khan, Zarak MD; Misra, Preeti MD

Checkpoint Inhibitors-Induced Focal Lung Toxicity; A Rare Occurrence

Introduction:

The recent development of immunotherapy, particularly the anti-programmed cell death 1 (PD-1) and anti-programmed cell death 1 ligand 1 (PD-L1), has led to personalized treatment of non-small cell lung cancer (NSCLC). Pulmonary toxicity due to the use of these agents can increase mortality. Improvement is seen in half of these patients with steroid treatment. We present the case of focal lung toxicity following immunotherapy in a patient with NSCLC.

Case:

An 86-year-old male with well controlled COPD on bronchodilators and stage IIIA lung adenocarcinoma on pembrolizumab every three weeks since his diagnosis 18 months earlier presented with 1-week history of shortness of breath and stable chronic productive cough of unchanged sputum amount. Vital signs showed hypoxia at 88% while breathing ambient air at rest, which improved with 4 L domiciliary supplemental oxygen therapy. Physical examination was significant for diffuse wheezing and crackles. Laboratory assessment showed normal CBC and a baseline CMP. A chest CT scan was performed which showed a new 3 mm left upper lobe pulmonary nodule that was concerning worsening disease and pulmonary toxicity. Pulmonary function tests were significant for mild COPD. Pembrolizumab was discontinued and prednisone with prolonged tapered regimen was started to treat possible pembrolizumab-induced pneumonitis. At follow-up, he had improved symptoms with a decrease in the size of the pulmonary nodule on CT scan.

Discussion:

The improvement in symptoms and size of nodule in our patient after discontinuation of pembrolizumab and initiation of prednisone indicate pulmonary toxicity. Although checkpoint inhibitors have been implicated as a cause of diffuse and/or multiple pulmonary infiltrates, focal disease has not been widely reported. To our knowledge, focal pulmonary toxicity is a rare occurrence. It is possible that the blockage of immune tolerance that is the hallmark of PD-1 inhibitors might result in an atypical inflammatory reaction, as was seen in our case. Drug-associated toxicity should be considered when new pulmonary nodules are seen in individuals being treated with PD-1 inhibitors. This should be further investigated to prevent the recurrence of toxicities, especially pulmonary toxicity following immunotherapy.

ACP Michigan Chapter Meeting 2022

Oral# 17

Category: CQI/EBM

Program: University of Michigan

Program Director: John DelValle, MD, FACP

Presenter: Rayan Kaakati

Additional Authors: Kassie Weber, Devvrat Malhotra, Eric Waselewski, Liz Spranger, John Gosbee

Recognizing Food Allergens in Hospitalized Patients

70 male admitted for cardiac catheterization with a history of celiac disease. Following catheterization he ended up receiving a meal with gluten resulting in significant nausea, vomiting and diarrhea as well as patient, family, and healthcare team dissatisfaction. Our goal was to create an intervention to reduce the percentage of patients who do not have their food intolerance (lactose or gluten) documented in the system to <10% within one year.

We performed a chart review on patients from who had documented celiac disease and/or lactose intolerance and then further assessed whether they had an associated allergy (lactose or gluten) documented which can cause them to inadvertently be given a diet that does not recognize their food intolerance. We also surveyed internal medicine residents and inquired whether residents were asking patients about food allergens. In addition, we interviewed the kitchen staff to learn how they track food allergens from EPIC.

We found that 79.5% of hospitalized patients with documented lactose intolerance and 37.5% of patients with documented celiac disease did not have an associated allergy documented which can cause them to inadvertently be given a diet that does not recognize their food intolerance. From interviewing kitchen staff, we discovered that they had a different system called "C-Board" that tracks diet orders and documents food allergens only if listed in the "allergens" section of EPIC. EPIC communicates only unilaterally documented allergens to C-board, while C-board cannot transmit data to EPIC. From our survey, we found that the majority of residents (52.5%) had never asked patients about food intolerances with 75% never entering a food allergen into EPIC.

To help reduce the percentage of patients who don't have their food intolerance documented in the system we have created a BPAs that asks providers for addition of gluten or lactose to be added to allergy list if a patient has documented celiac disease or lactose tolerance as a problem. We will check for process outcomes at 6 and 12 months to confirm percentage of admitted patients with celiac disease and lactose intolerance who did not have gluten or lactose listed as a food allergen.

ACP Michigan Chapter Meeting 2022

Oral# 18

Category: Clinical Vignette

Program: Western Michigan University Homer Stryker SOM

Program Director: Joanne Baker, MD, FACP

Presenter: Muhammad Armughan Ali

Additional Authors: Andrew Milbrandt, DO; Marium Rehman, MBBS; Joanne Baker, MD

Metastatic Melanoma Presenting as CVA Secondary to Intra-Cardiac Masses

Background:

Melanoma is an aggressive form of skin cancer known to metastasize easily. Here, we report a case with a metastatic melanoma of unknown primary that presented as embolic stroke secondary to bilateral intra-ventricular masses.

Case

A 36-year-old man presented with an episode of dysarthria and right upper extremity numbness which lasted for 10 minutes and was described as mumbling of incomprehensible words and a funny sensation in the right arm. Medical history was significant for hypertension and methamphetamine use. On presentation, he was asymptomatic and hemodynamically stable. Physical exam was significant for diffuse, painless lymphadenopathy (anterior and posterior cervical, axillary and inguinal). CT head was negative for any acute intracranial abnormality. Labs revealed a down trending pattern of troponin levels (0.54->0.45->0.34), and elevated d-dimers, prompting a CT angiogram of the chest which showed a filling defect in the right ventricle outflow tract and within the left ventricle. It was followed by a transthoracic echocardiogram which revealed multiple distinct masses in the left and right ventricle raising suspicion for primary cardiac or metastatic malignancy versus intra-ventricular thrombi.

Decision making

Cardiology, cardiothoracic surgery and Neurology were consulted. MRI brain revealed multifocal acute and subacute cerebral and cerebellar infarcts of varying sizes consistent with a central embolic process. Cardiac MRI revealed multiple left and right ventricle masses with sequences suggestive of malignant melanoma. Excisional biopsy of the left anterior cervical lymph node was subsequently performed which confirmed the diagnosis of metastatic melanoma. Gene analysis revealed PTEN deletion and BRAF mutation. Patient was later started on immunotherapy and is currently undergoing treatment with Ipilimumab and nivolumab for metastatic malignant melanoma.

Conclusion:

There is paucity of literature about cardiac metastasis of melanoma with unknown primary origin. Because of the rarity of this condition, it is crucial to note diverse diagnostic measures, including the utility of cardiac MRI, to aid in early recognition of this unique disease process and provide appropriate treatment.

ACP Michigan Chapter Meeting 2022

Oral# 19

Category: Clinical Vignette

Program: Western Michigan University Homer Stryker SOM

Program Director: Joanne Baker, MD, FACP

Presenter: Mariana Camelo Pereira

Additional Authors: Thales Nogueira Gomes MD, Alana Pinheiro Gomes MD, Thomas Flynn MD

Nocardia Niwae as a Rare Cause of Brain Abscess and Spinal Cord Nodular Disease in Immunocompetent Patient

INTRODUCTION: Nocardia species are a rare cause of infection, usually affecting people with severely compromised immune systems. These are gram-positive aerobic and branching filamentous bacteria. We present a case of Nocardia niwae as a cause of central nervous system infection in an immunocompetent female.

CASE PRESENTATION: A 53-year-old female without known medical conditions presented to the hospital for a four-day history of occipital headaches, right-sided neck pain, blurry vision, and subjective fevers. She had been admitted to the hospital five months earlier with a similar clinical picture and found to have cystic lesions in the right basal ganglia on magnetic resonance imaging (MRI). At that time, cerebrospinal fluid (CSF) analysis was unrevealing. Brain biopsy was performed and tissue specimen studies were negative. She was empirically treated for a brain abscess with six weeks of intravenous ceftriaxone, intravenous vancomycin and oral metronidazole. She had initial improvement, but symptoms returned after five months; at that point, MRI of cervical spine showed small enhancing nodules along the cervical spinal cord. CSF analysis revealed elevated protein, low glucose and 3,847 cells with polymorphonuclear predominance. Ceftriaxone and vancomycin were started. Extensive autoimmune disease assessment was negative; blood and CSF cultures (including acid fast bacilli) showed no growth. Biopsy of a cervical spine lesion was obtained and tissue culture grew Nocardia niwae. The patient was initially started on sulfamethoxazole-trimethoprim (SMX-TMP) and meropenem, but unfortunately developed febrile neutropenia as side effect from SMX-TMP. Patient was later started on adjunct therapy with moxifloxacin and ceftriaxone and currently remains on it with significant clinical improvement.

DISCUSSION: Upon literature review, we only found one other case report on Nocardia niwae, comprising lung disease on an immunocompromised patient. Our patient, however, had no underlying causes for immunodeficiency. and no pulmonary involvement. Treatment was based on available evidence for other Nocardia species. A 6-week course of meropenem was completed. Amikacin was also attempted in addition to ceftriaxone but stopped due to hearing loss. Our patient remains on treatment with ceftriaxone and moxifloxacin with a plan for a 12-month course, and results so far have been favorable.

ACP Michigan Chapter Meeting 2022

Oral# 20

Category: Research

Program: Spectrum Health MSU

Program Director: Talawnda Bragg, MD, FACP

Presenter: Hannah Bray

Additional Authors: Parker, Jessica; Shreiner, Andrew

Frequency of Inadequate Bowel Preparation Among Hospitalized Patients and its Impact on Length of Stay and Hospital Costs

Introduction: Colonoscopy is a useful diagnostic and therapeutic procedure to evaluate and treat lower digestive tract disease. It is important to visualize the colonic mucosa for proper assessment. Inadequate bowel preparation is associated with more colonoscopies performed, prolonged length of stay and increased hospital cost. Prolonged bowel prep, requiring more time than a standard prep would also presumably increase length of stay and hospital costs.

Objective: Objective of this retrospective study was to determine the frequency of inadequate bowel preparation in hospitalized patients. Secondary aims of this study were to determine the length of hospital stay and healthcare costs and to identify risk factors associated with inadequate and prolonged preparation.

Methods: All discrete hospital visits with one or more colonoscopies ordered at Butterworth Hospital, Blodgett Hospital, and Meijer Heart Center in Grand Rapids, MI from October 14, 2019 to October 4, 2020 were included in this study. Quality of preparation was taken from the colonoscopy procedure note. Extended preparation was defined as preparation requiring more than 36 hours from time preparation was ordered until the time of the colonoscopy procedure. Data was extracted from the electronic medical record stored in a REDCap database. Comparative analyses were used to assess differences in the adequate vs. inadequate group. These analyses included two sample independent t-test or Wilcoxon Rank Sum and Chi-Square or Fishers Exact test.

Results: 1134 subjects were included in the study, corresponding to the number of unique hospital visits with one or more colonoscopies ordered. 21.4% of inpatient colonoscopies had inadequate bowel preparation and 16.3% had prolonged bowel preparation time. Length of stay for inadequate bowel preparation was 6 compared to 5 days for adequate bowel preparation. Hospital costs for inadequate bowel preparation was \$36,357 compared to \$30,199 for adequate bowel preparation. Prolonged bowel preparations similarly were associated with increased length of stay and hospitalized costs.

Conclusion: Inadequate bowel preparation in the inpatient setting was associated with increased length of stay and hospital costs. Future study implementing a split-dose bowel preparation, used frequently in the outpatient setting, may be beneficial in the hospital to improve bowel preparation.

ACP Michigan Chapter Meeting 2022

Oral# 21

Category: CQI/EBM

Program: St Joseph Mercy - Ann Arbor

Program Director: Patricia McNally, MD, FACP

Presenter: Rana Alqusairi

Additional Authors: Elliot Hwang, MD. Ibolya Csernak, MD. Alycia Bellino. Ola Al-Sous, MD

Reducing Unnecessary Echocardiogram Study in Hemodynamically Stable Patients with Acute Pulmonary Embolism

Introduction:

Transthoracic echocardiogram (TTE) had gained popularity in prognosticating pulmonary embolism (PE) due to its role in risk stratification using right ventricular dysfunction (RVD). Despite that, it was regarded as one of the "Things we do for no reason" testing in intermediate and low risk patients. At our institution, BOVA score is used for risk stratifying acute PE patients. There was a concern that TTE was being over-utilized in acute PE patients, especially in times of limited resources. Our project aimed to reduce the routine use of echocardiograms in hospitalized patients with acute PE on the medicine teaching services with BOVA score of 3 or less by 30% within 6 months.

Methods:

We implemented a two-fold intervention. An educational session where current practice, as well as professional societies' recommendations and their evidence, were discussed. Secondly, we updated the current PE BOVA-score pocket card to include recommendations for avoiding TTE ordering if BOVA score < 4 unless it was thought to alter management. Later on, we also implemented dedicated recurrent brief teaching sessions to individual teams, in anticipation of variable practice with the new academic year. Data was collected by surveying teams' lists regularly on a 4-week basis based on residents rotating schedule.

Results:

Pre-intervention median of TTE utilization in PE patients with BOVA score 3 or less was 55%, which had improved over six months to 33.3%. We, unfortunately, didn't reach our full 30% reduction goal but even at our highest utilization blocks, we remained lower than previous baseline median.

Discussion:

TTE is often used in acute PE to assess RVD, although it rarely affects management in hemodynamically stable patients. It however increases cost and potentially hospital length of stay. Our intervention improved the TTE utilization rate, but not to our own goal. We appreciate the challenge of changing practice culture. We are planning a future PDSA cycle where we could provide individual feedback to teams on their ordering habits with the hope that it would have more effective and sustained results. Eventually, we hope to further expand our project hospital wide.

ACP Michigan Chapter Meeting 2022

Oral# 22

Category: Research

Program: St Joseph Mercy - Ann Arbor

Program Director: Patricia McNally, MD, FACP

Presenter: Ankita Badhwar

Additional Authors: Elliot Hwang MD, Dixy Rajkumar, Amber Pawlikowski MSN, RN, Anupam Suneja MD

Racial Disparities in 30-day Readmission and Utilization of Palliative Care in Patients with Heart Failure

Background:

Heart failure (HF) affects 6.2 million adults with annual costs (direct and indirect) estimated between \$30.7 – \$70.8 billion. Compared to white patients with HF, multiple studies reveal higher readmissions and lower mortality in black patients due to multiple factors. Given the known racial disparities in US healthcare, encompassing nearly every field, we sought to characterize potential racial disparities in processes of care and palliative care utilization for HF patients.

Methods:

This retrospective cohort study had a primary outcome of a composite of 30-day readmission and 30-day mortality, and multiple secondary outcomes, including the use of palliative care and follow-up appointments within 30 days of discharge. Data from I-MPACT, a Blue Care Blue Shield Value Partnerships program composed of twenty local health systems, was analyzed using inverse probability treatment weight (IPTW) applied to the logistic regression. Power calculations demonstrated a need to include a total of 1476 patients.

Results:

Of the 4785 patients, 1108 were black. Unadjusted analysis demonstrated higher readmissions (22.4% vs 19.8%; $P=0.035$) and lower mortality (1.76% vs 2.92%; $P=0.061$) in black versus white patients, respectively. Black patients were less likely to receive palliative care referral (0.84% vs. 2.33%), appointments within 30 days (34.7% vs. 49.72%), office visit during follow-up (85.7% vs. 88.2%), increased number of emergency department (ED) visits post discharge, worse LACE index and social deprivation index scores, though had higher use of evidence-based medications (82.3% vs. 79.3%).

Conclusion:

Our main results demonstrated the ‘paradox’ of a higher 30-day readmission rate and lower mortality in black versus white patients. We found that multiple secondary outcomes varied between white and black patients after controlling for patient age, sex, and insurance type. Some of these process measures may explain the higher readmission rates in black patients. As a next step, we are conducting a study to determine the impact of health equity indicators on HF outcomes.

ACP Michigan Chapter Meeting 2022

Oral# 23

Category: CQI/EBM

Program: St Joseph Mercy - Ann Arbor

Program Director: Patricia McNally, MD, FACP

Presenter: Agara Srinivasa Gagan Kumar

Additional Authors: Ola Al-Sous; Christopher Savvides; Sunaina Gowda Ramesh Babu; Nima M. Abdi

Improving Active Documentation of Lines and Drains Among ICU Resident Teams at the Time of Transfer from ICU

Introduction

Healthcare-associated infections are a threat to patient safety. According to the CDC, there was a 24% increase in central line bloodstream infection between 2019-2020. During our previous local quality improvement project, it was noted that poor documentation was associated with unawareness and, therefore, unnecessarily prolonged use of indwelling lines and drains, especially at the transition of care. Previously, a paper checklist at transfer time was utilized as a reminder for lines and tubes reconciliation. This project aimed to improve documentation of Lines and Drains among the teaching Medical Intensive Care Unit (MICU) teams at the time of transition out of MICU by 20% within three months.

Methods

Our intervention included creating an electronic dot phrase that prompted a checklist of active lines and drains with their indications to be included in the transfer out-of-MICU note. The use of the dot phrase in the transfer note was tracked as a surrogate for documentation. Its accuracy was also followed by comparing it to the AVATAR (a graphical representation of all lines and drains documented by nursing during a patient's stay in the MICU). Data collection was done weekly using electronic medical records (EMR) generated reports.

Results

The pre-intervention median of accurate documentation rate was 29.5%, which had improved post-intervention to 61.5% at the end of three months. A run chart representation of the results revealed a successful shift in the documentation for ten weeks. Unfortunately, the shift was not sustained during the most recent COVID-19 surge, although documentation rates continued to be higher than prior.

Discussion

Accurate documentation at the time of transition of care improves patient safety and avoids the unnecessarily prolonged insertion of tubes and lines. On a deeper analysis of our results, we noted that it correlated with the time of our hospital entering the ACGME emergency status due to COVID-19, resulting in a more frequent change in our resident teams and a lower documentation rate. We are currently planning a second PDSA cycle. We will advocate to include the use of the dot phrase as one of the expectations reviewed during the MICU monthly pre-rotation mandatory refresher.

ACP Michigan Chapter Meeting 2022

Oral# 24

Category: Research

Program: St Joseph Mercy - Oakland

Program Director: Geetha Krishnamoorthy, MD, FACP

Presenter: Joseph Sneij

Additional Authors: Yi Lee, MD; Swechchha Silwal, MD; Esentur Salamatov, HBS; Robert Coakley, BSc; Pritha Chitagi, MD; Geetha Krishnamoorthy, MD

Beliefs and Reasons for Vaccine Refusal in Unvaccinated COVID-19 Patients in Suburban Michigan

INTRODUCTION

The rapidly evolving COVID-19 pandemic has presented the medical community with numerous challenges such as the COVID-19 vaccine hesitancy by the broader public. Although studies have suggested reasons behind vaccine hesitancy in the general population, very few studies have examined vaccine hesitancy in hospitalized unvaccinated patients. Herein, we performed a cross-sectional study in a suburban hospital in Michigan to investigate the socioeconomic factors and reasons associated with vaccine refusal.

METHODS

A cross-sectional survey was performed among hospitalized adult patients in a 497-bed community teaching hospital after being approved by the Institutional Review Board. The study period was November 2021 to February 2022. Our inclusion criteria were unvaccinated adults with positive COVID-19 test on admission. Exclusion criteria were vaccinated patients. The questionnaire consisted of multiple-choice, regret-scale, and open-ended questions to assess the beliefs and personal reasons for vaccine refusal. Simple descriptive and numerical analysis were performed using Google forms and Google sheets.

RESULTS

A total of 72 patients were surveyed. The mean age was 57.1 years based on midpoint approximation, 53.3% were female (average age 57.5), 46.7% were male (average age 57.3). Self-identified race was Caucasian in 66.7%, 30.3% were high school graduates, 47.8% had an annual income > \$50,000 and 55.3 % were unemployed. We found that the major factors cited for vaccine refusal were lack of information regarding the vaccine (41.3%), personal freedom (25.3%), and fear of side effects (22.7%). Forty seven percent agreed or strongly agreed that vaccine refusal was the right decision, 33.7% regretted their choice. About a third of patients said they would recommend the vaccine to others and 39% would leave the choice to the individual.

CONCLUSION

In a suburban hospital setting, unvaccinated patients at the hospital were predominantly elderly, retired Caucasians, who had a high school education or more and with an income of > \$50,000 annually. Most people that refused the vaccine felt like they made the right choice and had no regrets. Paradoxically, most patients also understood that refusing the vaccine caused them substantial personal harm.

ACP Michigan Chapter Meeting 2022

Oral# 25

Category: Research

Program: St Joseph Mercy - Oakland

Program Director: Geetha Krishnamoorthy, MD, FACP

Presenter: Kevin Stepanek

Additional Authors: Pritha Chitagi, MD

Retrospective Analysis of COVID-19 Patients Developing Otherwise Rare Complications

Introduction: Over the last two years, it has been felt that there was a disproportionate incidence of complications including Pneumothorax, Pneumomediastinum, and renal disease necessitating dialysis in patients with confirmed or suspected COVID-19 infection.

Methods: In a retrospective cohort, all patients were admitted to St. Joseph Mercy Oakland Hospital in Pontiac, Michigan between March 2020 and November 2021. The data collected included age, sex, BMI, Length of Stay, COVID-19 testing result, diagnoses of pneumothorax, pneumomediastinum, mechanical ventilation or intubation orders, renal failure, and diagnoses of dialysis dependence or dialysis orders.

Results: 9,522 patients are included in this study, with 35.6% (3,392 patients) COVID-19 suspected or confirmed positive and 64.4% (6,130 patients) confirmed COVID-19 negative. There were 29 cases of pneumomediastinum and 24 cases of pneumothorax, none of which occurred in intubated patients. The incidence of pneumomediastinum was significantly higher ($p = 0.001$) in the COVID-19 positive or suspected group (0.6%, 19 patients) than in the COVID-19 negative group (0.2%, 10 patients). The incidence of pneumothorax was not significantly different ($p = 0.294$) between the COVID-19 positive or suspected group (0.2%, 13 patients) and the COVID-19 negative group (0.3%, 11 patients). The incidence of hemodialysis was significantly higher ($p < 0.0001$) in the COVID-19 negative group (9.4%, 576 patients) than in the COVID-19 positive or suspected group (6%, 203 patients). We also found that there were significant increases for incidence of Code Blue (i.e. cardiac arrest, $p = 0.01$), patient expiration ($p < 0.0001$), and mechanical ventilation ($p = 0.001$) in the COVID-19 positive/suspected group. Among secondary outcomes there was significantly higher BMI ($p < 0.0001$) and proportion of hispanic/latino ethnicity patients ($p < 0.0001$) in the COVID-19 positive/suspected group. There was a significantly higher incidence of cancer patients ($p < 0.0001$) in the COVID-19 confirmed negative group. There was no significant difference for peritoneal dialysis between the groups ($p = 1.00$).

Discussion: Given the findings of significantly higher incidence of pneumomediastinum, Code Blue, mechanical ventilation and death in COVID-19 positive/suspected patients, our hope is that we remain vigilant to uncover further disease associations and/or complications as more COVID-19 case data becomes available.

ACP Michigan Chapter Meeting 2022

Oral# 26

Category: Clinical Vignette

Program: Wayne State University - Detroit

Program Director: Jarrett Weinberger, MD, FACP

Presenter: Vikramjit Dhillon

Additional Authors: Mohamad I. Itani, Hersimren Minhas

An Unexpected Case of Narcotic Bowel Syndrome Treated with Suboxone

A 44-year-old woman with uncontrolled type-2 diabetes mellitus complicated by autonomic neuropathy, gastroparesis requiring a gastric pacemaker, and end-stage renal disease (ESRD) on hemodialysis presented to the emergency department (ED) with severe abdominal pain, nausea, and vomiting. Immediate evaluation in the ED was unrevealing, and she was diagnosed with gastroenteritis based on recent dietary changes. The patient was prescribed narcotic pain medication for gastroparesis-associated abdominal discomfort, and has reported adherence to therapy despite the lack of efficacy in relieving her pain. She was given ondansetron and was discharged. Over the 3 years that followed, the patient continued experiencing severe abdominal pain and returned to the ED 18 times, requiring 10 hospitalizations. She consistently reported pain scores of 9/10 as well as nausea. During this time, she continued treatment with immediate-release opioids, consisting of combined hydrocodone/acetaminophen, eventually requiring hydromorphone twice daily. Other causes of pain, including non-occlusive mesenteric ischemia, intravascular coagulopathy, biliary dysfunction, and intermittent porphyria were ruled out. She underwent treatment with novel therapies such as celiac plexus neurolysis, yet she remained in pain. Her subjective pain severity scores fluctuated between 6/10 and 10/10 for weeks, for which she sought repeated hospitalization. Attempts to taper the narcotic medications were unsuccessful. A trial of lubiprostone and metoclopramide relieved her constipation, however her pain did not subside. During her last hospitalization for abdominal pain, a diagnosis of NBS was considered, and the patient agreed to try Suboxone. This required a slow taper from rapid-acting opioids until the patient exhibited mild withdrawal symptoms. Withdrawal severity was measured using the clinical opioid withdrawal scale (COWS) score and recorded every 6 hours. Once the COWS scores ranged between 8-12, Suboxone was initiated. Initially, Suboxone 8mg/2mg twice daily was selected. She reported a marked decrease in her pain severity over the next 2 days, and by the fifth day of treatment, her pain had completely resolved. She continued Suboxone therapy in an outpatient setting and eventually achieved complete taper of full-opioid medications. Since starting Suboxone therapy 8 months ago, the patient has established care in the resident primary care clinic, started seeing a therapist and not required further hospitalizations.

Oral# 27

Category: Research

Program: Wayne State University - Detroit

Program Director: Jarrett Weinberger, MD, FACP

Presenter: Mohamedanwar Ghandour

Additional Authors: Samah Suleiman, Sarah Naser, Zeenat Bhat, Yahya Osman Malik

Changes in Thyroid Function in Dialysis Patients with Severe Secondary Hyperparathyroidism

Background: A common complication of advanced Chronic Kidney Disease (CKD) is uncontrolled secondary hyperparathyroidism, is associated with increased cardiovascular morbidity and mortality. While failure of the kidneys causes a wide array of thyroid abnormalities, little is known about whether uncontrolled hyperparathyroidism in ESRD patients undergoing dialysis is associated with thyroid dysfunction and if the association of thyroid dysfunction and hyperparathyroidism has a relation to vintage on dialysis as well as adverse effects on cardiovascular outcomes in those patients.

Methods: PTH levels were dichotomized into groups of <600 (controls: $n=36$) and ≥ 600 (study group: $n=62$). Serum levels of PTH, TSH, T3, T4, FT4, and FT3 were obtained and statistically analyzed during two different times within a month period. Using chart review, cardiovascular events, defined as coronary artery disease, heart failure, and/or sudden cardiac death, that occurred over the past 5 years were retrieved from the electronic medical records. In addition, dialysis vintage defined as short [less than 5 years] and long defined as [more than 5 years] was obtained by chart review. A Spearman's Rho correlation, a Mann Whitney U test, and Fisher's Exact test were performed to determine the relationships between PTH, TSH, and FT4.

Results: There was no relationship between the thyroid and PTH levels as the TSH by PTH group was non-significant ($p=0.98$), as was the FT4 by PTH group ($p=0.98$). Regarding vintage on dialysis, the controls' arm had a higher percentage of short vintage (68.6%) compared to the study group (51.7%), was non-significant ($p=0.134$). Those in the study group had a higher proportion of those in the longer vintage group (48.3%) than those in the control group (31.4%). A higher proportion of those with the presence of CVD (83.3%) were found in the control group (83.3%) than those in the PTH study group (74.0%); $p=0.41$, was non-significant.

Conclusion: Despite the common embryological origin and anatomical proximity of the two glands, no correlation was found between the severity of 2HPT and development of thyroid dysfunction. There was no statistically significant difference between the two groups in CV outcomes. However, vintage on dialysis was longer in the study vs. the control arm.

ACP Michigan Chapter Meeting 2022

Oral# 28

Category: Clinical Vignette

Program: Wayne State University - Detroit

Program Director: Jarrett Weinberger, MD, FACP

Presenter: Natalie Hubbell

Additional Authors: Natalie Hubbell DO, Hersimren Minhas MD, Ahmad Alratroot MD, Aryan Shiari MD

Empyema Necessitans in the Setting of Extraintestinal Salmonella

Introduction:

Empyema necessitans (EN), is a rare and serious complication of bacterial empyema resulting from direct extension of the pleural empyema into surrounding tissue. EN most commonly presents with a fluctuant anterior chest mass, fever, cough and dyspnea. The condition is increasingly rare in modern medicine due to the ease of fluid drainage and the widespread use of antimicrobial therapy. We report a case of EN occurring in a patient following wedge resection and development of pleural effusions.

Case:

A 58-year-old man with cirrhosis was admitted following 30 pounds of weight loss and months of hemoptysis. Computed tomography (CT) of the chest revealed a right pulmonary mass and cavitating consolidation. The patient underwent open biopsy with wedge resection and pleural tissue decortication. Chest tubes were placed, and sputum and tissue cultures grew *Salmonella* spp. Given the rarity of extraintestinal *Salmonella* spp., cultures were further incubated and identified as *Salmonella* Poona. Bilateral pleural effusions were present but not drained prior to discharge.

One month later the patient returned with shortness of breath, worsening leukocytosis and drainage from the chest tube site. CT thorax revealed a pleural base collection of fluid and air which tracked into the deep extrathoracic soft tissue, consistent with EN. This resulted from an undrained infected pleural effusion that dissected the pleural space and invaded into the surrounding tissue.

Discussion:

Multiple risk factors for EN were present in this patient, such as undrained pleural effusion and trauma to the pleural space during his wedge resection. The presentation was unusual because the infection infiltrated the posterior pleural wall. The posterior wall offers more resistance to fluid than the anterior wall because of connective tissue. In this case, the posteriorly located lung mass acted as a nidus for infection and weakening the pleura.

Salmonella spp. is not known to cause EN. This case illustrates that caution for EN is necessary regardless of the microbiological picture, and that EN may develop anywhere an inciting nidus is present. Clinicians should treat pleural effusion and empyema aggressively to prevent progression to EN.

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Category: Clinical Vignette

Program: Wayne State University - Detroit

Program Director: Jarrett Weinberger, MD, FACP

Presenter: Saivaishnavi Kamatham

Additional Authors: Anirudh R. Damughatla D.O., Vanessa Milan-Ortiz M.D., Mohammed Najeeb Al Hallak M.D., M.S.

A Rare Case of Metastatic Rectal Adenocarcinoma with Orbital Metastasis

Introduction: Colorectal cancer often metastasizes to liver, lungs, and lymph nodes. Orbital metastases from colorectal cancer are extremely rare, with only around 10 cases reported in literature worldwide. Here, we report a young patient with orbital metastasis as an initial presentation for metastatic rectal cancer.

Case Description: A 42-year-old gentleman with hypertension, previously treated Hepatitis-C, and history of asbestos exposure presented to PCP with right eye pain in October 2021. He was treated with antibiotics for likely sinusitis, but as symptoms did not resolve, he was referred to ENT, where CT scan of the sinuses was concerning for thickness in the right medial rectus muscle. He was briefly treated with steroids which did not help the pain. MRI of orbits was obtained due to unresolved symptoms, which showed a 1.8 cm mass in right medial rectus muscle. He was referred urgently to Ophthalmology, where biopsy of the mass showed adenocarcinoma with immunohistochemical stains consistent with colonic primary. He was referred to medical oncology for further evaluation. A PET scan showed an FDG avid mass in the rectum consistent with primary rectal cancer. In addition, a few other metastases were seen to the right lung, liver, left perirectal lymph node, and left L2 paraspinal muscle. He was started on chemotherapy using FOLFOXIRI regimen (5-Fluorouracil, Leucovorin, Oxaliplatin, and Irinotecan) and had a resection of his right eye medial rectus mass to prevent vision loss. Germline genetic testing showed a variant of unknown significance in the ATM gene. He completed four cycles of FOLFOXIRI so far and is awaiting his first restaging CT scan. CEA was not elevated at baseline, so circulating tumor DNA level was checked to monitor his disease response to treatment. Clinically, his rectal bleeding resolved after two cycles of chemotherapy, along with improvement in energy and appetite.

Discussion: This case presents a rare instance of rectal cancer metastasizing to the rectus muscle of the eye. Physicians must consider a broad range of differentials when approaching unusual presentations of common medical conditions. In such cases, an accurate diagnosis is pivotal to provide optimal management to improve outcomes and prevent complications.