

Oral #1

Category: Clinical Vignette

Program: Ascension St. John Hospital

Director: Raymond Hilu, MD, FACP

Presenter: Hussein Gharib

Additional Authors: Gerald Whitney, M.D., Raymond Hilu, M.D. FACP

Cardiac Dysrhythmia From Hypermagnesemia Due to Treatment of Constipation

Introduction: Hypermagnesemia is an under recognized cause of cardiac dysrhythmia. We present a case of junctional bradycardia due to SA node suppression from hypermagnesemia.

Case Presentation: An Elderly African American female with a history of breast cancer on anastrozole, Hypothyroidism, Chronic kidney disease, Constipation, Hypertension, Diabetes mellitus was sent to the ED by her Oncologist for bradycardia. Patient was experiencing increased weakness, and occasional orthostatic symptoms such as dizziness when standing up for the past couple of months. The physical exam was notable for bradycardia, and trace bilateral lower extremity edema. Lab work revealed acute kidney injury with a creatinine of 4.01 mg/dL and hypermagnesemia of 4.0 mEq/L. ECG showed junctional bradycardia with p waves consistently occurring after the QRS complex. Upon further questioning, the patient was taking Milk of Magnesia four to five times a day to relieve her constipation. Work up revealed hemodynamic acute tubular necrosis, resulting in acute kidney injury and hypermagnesemia. Consequently, SA node was suppressed, and the AV node was the primary pacemaker in this setting generating retrograde conduction P waves stimulating the SA node. The patient was intravenously and orally hydrated which resulted in gradual resolution of AKI and hypermagnesemia. A repeat ECG demonstrated resolution of the junctional rhythm.

Discussion: This case highlights how hypermagnesemia can lead to SA node suppression, and the importance of history taking. As an internist, it is very important to wisely choose medical management even in the setting of simplest complaints such as constipation, and how treatment plans can lead to ramifications in patients with multiple comorbidities.

Oral #2

Category: Research

Program: Ascension St. John Hospital

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A Case Control Study of COVID 19 vs Influenza During the Pandemic: Can We Distinguish COVID-19 from Flu?

Coronavirus 2019 Disease (COVID-19) and influenza share many symptoms. The sensitivities of rapid molecular testing for both COVID-19 and influenza are highly variable when compared with reverse transcription polymerase chain reaction testing.

We evaluated the demographics, clinical history, physical findings, and comorbidities of patients with influenza and patients with COVID-19 to determine factors that may aid in the differentiation of the two diseases.

We conducted a retrospective chart review of hospitalized patients with confirmed influenza or COVID-19 between 1/1/2020 and 4/2/2020.

The final group included 192 patients; 100 COVID and 92 influenza. COVID-19 patients were older ($p=0.05$) and had higher BMI ($p=0.001$). COVID-19 patients were more likely to present with fever ($p=0.008$) and altered mental status ($p=0.04$). Influenza patients were more likely to report myalgia ($p=0.01$), sore throat ($p<0.0001$) and nausea/ vomiting ($p=0.05$). Multivariable analysis demonstrated that, after controlling for age, male patients were 2.7 times more likely to have COVID-19 (0.02), patients reporting fever were 4.1 times more likely to have COVID-19 (0.002) and for every one unit increase in BMI, the odds of COVID-19 increased by 7.1% (0.004). Patients reporting a sore throat were 5.6 times more likely to have influenza (0.003) and as the number of comorbidities increased the risk of influenza increased 41% (0.006). Our results demonstrate that clinical presentation and demographic information may be useful in distinguishing between influenza and COVID-19.

Oral #3

Category: Research

Program: Ascension St. John Hospital

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Tocilizumab: A Retrospective Multi-Center Cohort Study of Critically Ill Patients with COVID-19

Background: Coronavirus disease 19 (COVID-19) can have a severe presentation requiring admission to the intensive care unit (ICU). Previous retrospective cohort studies in critically ill adults with COVID-19 from the USA and Italy suggest that treatment with tocilizumab benefited survival caused a reduction of inflammatory markers and decreased need for mechanical ventilation. We evaluated the effectiveness of tocilizumab treatment on critically ill patients with COVID-19.

Methods: This was a multi-center retrospective cohort study of 154 adults admitted to the ICU for severe COVID-19 pneumonia between March 15th and May 8th, 2020, to Ascension Hospitals. Data were obtained by electronic medical record review. The primary outcome of interest was mortality. Secondary outcomes were ICU length of stay and rates of secondary infections. We used multivariable Cox-regression models to assess the effect of tocilizumab on mortality.

Results: Of 154 patients, 34 (21.4%) received tocilizumab. The mean age was 61.5 +/- 14.4 years; the majority were male and African American. Compared to the untreated, the treated were significantly younger, had fewer comorbidities, lower creatinine and procalcitonin levels, and higher alanine aminotransferase levels on admission. The overall case-fatality rate was 71.4%; it was significantly lower in the treated compared to the non-treated (52.9 % vs. 76.7%; p=0.007). In multivariable survival analysis, adjusted for age, several comorbidities, and septic shock, tocilizumab treatment was associated with a 2.1 times lower hazard of mortality when compared to the non-treated (hazard ratio: 0.47; 95% CI: 0.27, 0.83; p=0.009). The average length of stay in the ICU was significantly longer for the treated compared to the non-treated (21.7 +/- 13.2 vs. 7.4 +/- 5.8 days, p<0.0001). The prevalence of secondary infection was higher in the treated group compared to the non-treated without significant difference (41.2% vs. 28.3%; p=0.17).

Conclusion: Tocilizumab treatment for critically ill patients with COVID-19 resulted in a lower likelihood of mortality.

Program: Beaumont Hospital – Royal Oak

Director: Sandor Shoichet, MD, FACP

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Type 1 Cryoglobulinemia Secondary to Primary Plasma Cell Leukemia

Primary plasma cell leukemia (pPCL) is a rare and aggressive form of plasma cell dyscrasia that comprises 1% of the plasma cell dyscrasias. Even more rare is its association with type 1 cryoglobulinemia which management can be challenging. A 63-year-old African American male with no past medical history presented with severe burning pain in his legs, necrotizing rash, constitutional symptoms and severe acute kidney injury (AKI). HIV, hepatitis B and C were negative. Serum electrophoresis revealed an M-spike of 5.67, IgG of 7000, free lambda of 152.10 with a K/L of 0 and cryoglobulin of 81%. CT revealed extensive lytic lesions throughout the spine. Skin biopsy revealed thrombotic vasculopathy. Bone marrow biopsy revealed 80% dysplastic plasma cells. Flow cytometry of peripheral blood showed dysplastic plasma cells with high expression of CD38 and CD138 but negative for CD19, CD20, CD56 and CD117. FISH revealed t(11;14)(q13;q32) resulting in IGH/CCND1 gene rearrangement. Type 1 cryoglobulinemia secondary to IgG/lambda primary plasma cell leukemia was diagnosed. Patient's pain worsened and skin lesions increased in size and new eruptions appeared in other parts of the body, so plasmapheresis was initiated. After six plasmapheresis cycles, skin lesions stabilized, no new lesions appeared, pain regimen was weaned and AKI resolved. Cryoglobulin level became undetectable after four plasmapheresis cycles. VRD (bortezomib, lenalidomide, dexamethasone) was started during the hospitalization. No evidence of tumor lysis syndrome was noted. Patient was successfully discharged 3 weeks after presentation. Three months later, patient achieved a very good response. This case illustrates the rapidly progressive nature of type 1 cryoglobulinemia in patients with pPCL. Thus, recognition of severe organ dysfunction should raise consideration for plasmapheresis. In a case series by Payet et al., patients treated promptly with plasmapheresis achieve disease stabilization in 90% of the cases and those who had it delayed eventually required dialysis or skin surgery.

Program: Beaumont Hospital – Royal Oak

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Potts Puffy Tumor: A Rare Complication of Rhinosinusitis

Pott's puffy tumor is a sub-periosteal abscess of the frontal bone with associated osteomyelitis. It arises as a complication of untreated or partially treated frontal sinusitis. Overall prevalence has decreased due to timely treatment with antibiotics. It is largely limited to the pediatric population and is rare in adults.

A 46-year-old Caucasian male with a history of chronic rhinosinusitis presented with one-week history of progressive painful swelling over the left forehead without any other systemic signs of infection. He was started on intravenous ampicillin-sulbactam and given one dose of dexamethasone due to concern for intracranial involvement. Facial CT showed 3 x 2 cm expansion of left frontal sinus into the overlying soft tissue with loss of frontal sinus cortex anteriorly, laterally, and medially as well as significantly thinned posterior wall. MRI brain with and without gadolinium confirmed the CT findings and ruled out intracranial involvement. He underwent bilateral functional endoscopic sinus surgery with bilateral frontal sinusotomy, total ethmoidectomy, maxillary antrostomy, and septoplasty (Draf III). Tissue cultures grew *Streptococcus intermedius*, *Staphylococcus lugdunensis* and few *Propionibacterium acnes*. He was discharged 3 days after surgery to complete a 6-week course of intravenous Ertapenem for osteomyelitis.

Pott's puffy tumor is an infectious process and not an oncologic process. It is a rare complication of untreated or incompletely treated sinusitis. Although more common in children, it should be considered in adults with rapidly growing painful forehead swelling. Diagnosis is made with CT of head and sinuses. Advanced imaging with MRI may be needed if there is a concern for intracranial extension, which can occur in up to 30% of cases. Management involves prompt intravenous antibiotics to cover gram positives and anaerobes. Steroids are added when intracranial extension is suspected. Endoscopic sinus surgery with drainage of abscess is the definitive treatment along with long-term intravenous antibiotics for osteomyelitis.

Oral #6

Category: Research

Program: DMC Sinai-Grace Hospital

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GLP1 Analogs, SGLT2 Inhibitors, and Metformin: Hunger Game or Fat Burning Machine?

Introduction: There has been some robust advancement in obesity management as we are heading towards a global obesity crisis. Some medications, especially antidiabetics, have shown significant efficacy in reducing weight as a collateral benefit. This report focuses on comparing the efficacy of GLP1 analogs, SGLT2 inhibitors, and metformin in weight reduction. **Methods:** Literature search performed using PubMed and Cochrane databases. Keywords used "Anti-diabetics, weight loss, diabetes, comparison." We evaluated multiple studies, including systematic reviews and meta-analysis.

Results: In a meta-analysis study with a total of 97 RCTs, SGLT2 inhibitors were associated with a more significant decrease in weight change from baseline (weighted mean differences - 2.01kg, 95%CI -2.18 to -1.83kg, $P < 0.001$) as compared with placebo. In another study on GLP1, when compared to placebo, GLP-1 treatment was also associated with a comparable weight reduction from baseline (weighted mean differences -1.59kg, 95%CI -1.86 to -1.32kg, $P < 0.001$). In an RCT with metformin, the mean weight loss in the metformin-treated group was 5.8 ± 7.0 kg. Untreated controls gained 0.8 ± 3.5 kg on average. Weight loss was independent of age, sex, or BMI. When combining one SGLT2 inhibitor and a GLP1 analog, the synergistic fat-burning effect is more significant (3-5kg) than each alone (~2kg for SGLT2 and 2-4kg for GLP1)-still, such benefit is modest.

Conclusion: Treatment with SGLT2 inhibitors and GLP-1 analogs showed comparable and statistically significant weight changes from baseline and compared to placebo treatment, respectively. Metformin is an effective drug and one of the most widely researched older drugs to reduce weight in an outpatient setting in insulin-sensitive and insulin-resistant obese patients. The right mechanism for causing weight loss of these antidiabetic drugs is not well-understood but is more likely to reduce hunger. Some researchers reported that metformin lowers low-grade obesity-associated inflammation and influences macrophages' polarization by moving them from pro-inflammatory to anti-inflammatory pathways.

Program: Henry Ford Allegiance Health

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Thinking Beyond Bacterial: A Case of Cutaneous Blastomycosis

Introduction:

Blastomycosis is caused by a dimorphic fungus, *Blastomyces dermatitidis*, that mainly causes pulmonary disease. Cutaneous blastomycosis is infrequent and tends to be misdiagnosed given its similar presentation to other cutaneous fungal infections and malignancies.

Case description:

A 51-year-old female presented with a two-month history of disfiguring nasal lesion. The patient had a past medical history of cervical cancer in remission. Social history was significant for frequent travel throughout the US as a truck driver, including the Midwest. The patient had a non-purulent verrucous plaque on her right nare, which was painless and mildly pruritic. Superficial cultures grew *Enterococcus faecalis*, prompting treatment with oral cephalexin and topical mupirocin. Given no relief, the patient was started on clindamycin followed by Augmentin. Both treatments were unsuccessful.

The lesion was then biopsied and fungal cultures were sent. The biopsy showed broad-based budding yeast surrounded by pseudoepitheliomatous hyperplasia, and cultures grew *Blastomyces dermatitidis*. The patient was initiated on 200 mg itraconazole three times daily for the first three days, followed by 200 mg itraconazole twice daily for the next 12 months. She showed notable improvement within a month.

Discussion:

This patient was initially misdiagnosed with bacterial infection due to superficial cultures, which were likely a contaminant. It was only after a biopsy that the patient was accurately diagnosed. Besides bacterial infection, cutaneous blastomycosis is often confused with coccidioidomycosis, mycobacterium or squamous cell carcinoma. In patients presenting with persistent facial lesions in the setting of a frequent travel history, fungal etiologies should be high on the differential. Patients such as ours with a competent immune system, should raise suspicion for blastomycosis as it tends to affect immunocompetent hosts more frequently than other fungal infections. A biopsy and fungal cultures should be sent at the outset for accurate diagnosis and treatment.

Oral #8

Category: CQI/EBM

Program: Henry Ford Allegiance Health

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Case Conference Project of the Care Coordination Continuum Task Force

Introduction: Patients that have frequent use of health care is often complicated by socioeconomic related factors. Patients are increasingly affected by influences surrounding their healthcare. There is no current process for identifying and following patients who need access to community resources. The Case Conference process is created to bring together caregivers of identified high utilizers of healthcare and will provide targeted multidisciplinary intervention to coordinate care for these complex cases.

Methods: Target of Performance: Decrease rates of healthcare use and hospital re-admission. Implemented the Lean Six Sigma DMADV framework to identify the problem, capture current processes, analyze available resources, and design a process that is achievable, functional, efficient, and maximizes the benefit to the patient.

Results: Identified owners of the process and created standard work to ensure success in the adaptation of the new process. Develop and improve the process of measuring the success of the project. Providing confidential access to all stakeholders.

Conclusion: Initiated Case Conferences process as a way to identify gaps in patients' access to resources, link the care team by reviewing shared complex patients; communicate challenges, and creating a consistent plan of care. Monitor readmission rates, and develop targets (as needed) to measure our success.

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Program: Henry Ford Health System – Detroit

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Intravenous Amiodarone-Induced Skin Necrosis

Introduction: Though a potent antiarrhythmic, amiodarone has many adverse effects which commonly involve the thyroid gland, liver, lungs and skin. We report an uncommon limb-threatening dermatologic reaction from intravenous administration of amiodarone.

Case Presentation: Our patient was a 65-year-old admitted to the ICU for chronic obstructive pulmonary disease exacerbation. During her ICU stay, she suffered cardiac arrest requiring cardiopulmonary resuscitation. After return of spontaneous circulation, wide-complex tachyarrhythmia was noted, requiring administration of amiodarone through her peripheral IV. She immediately developed an erythematous streaking rash surrounding the left forearm intravenous site. Over the next 4-5 days, her rash transformed into hemorrhagic bullae and later necrosis. Although patient also received vasopressors during resuscitation, per dermatology, bullae are less commonly associated with vasopressor extravasation. Therefore, skin changes were attributed to be secondary to extravasation of amiodarone. Given progressive necrosis of her thumb, an amputation was recommended.

Discussion: Most of the common skin reactions from amiodarone including blue-grey skin discoloration and photosensitivity occur from chronic therapy and rarely require discontinuation of treatment. Amiodarone-induced skin necrosis is an acute complication resulting from extravasation during intravenous administration and if extensive, can result in significant morbidity and limb loss. Tissue necrosis could be the result of the low pH of the solution and additional additives such as polysorbate and benzyl alcohol. Treatment primarily involves local wound care, but surgical intervention might be warranted in presence of significant tissue necrosis. Some studies have suggested that, in addition to wound care, intradermal hyaluronidase can help with wound care but is dependent upon the degree of injury. This case highlights the importance of ensuring the presence of well-functioning, large-bore peripheral intravenous access or central access for amiodarone administration to minimize the risk of tissue damage.

Oral #10

Category: Research

Program: Henry Ford Health System – Detroit

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Compression Wraps as Adjuvant Therapy in the Management of Acute Systolic Heart Failure: A Pilot Study

Background: Lower extremity edema is among the most prevalent symptoms in decompensated heart failure (HF), often serving as a clinical target in patient management. However, lower extremity compression wraps (LECW) are seldom used in the acute setting, with little data on efficacy in HF.

Clinical question: Evaluate the efficacy of LECW as adjuvant therapy in management of HF with reduced ejection fraction (EF)

Methods: Open-label, randomized controlled trial (RCT) with 2:1 randomization of adult patients with HF and reduced EF less than 40% admitted to telemetry unit for intravenous (IV) diuretic therapy

Interventions: Application of LECW by trained healthcare provider

Results: A total of 32 patients were enrolled, with 29 patients completing the study; 19 (66%) in the control arm, and 10 (34%) in the intervention arm. Patients in the intervention arm required less escalation of diuretic therapy (0 vs 5 patients, $p=0.079$), and less frequent use of continuous infusion therapy (0 vs 7 patients, $p=0.027$). Total days of IV diuresis was not significantly different between the two groups. Greater net reduction of edema was seen in the intervention group ($1.5+ [1-2]$ vs $1+ [1-2]$, $p=0.072$), with fewer cases of AKI (1 vs 13, $p=0.005$). The intervention group scored significantly better on MLWHF (55.5 vs 65, $p=0.021$), including both the physical (17.5 vs 23, $p<0.001$) and emotional (5.5 vs 11, $p<0.001$) dimension scores. Overall LOS was shorter in the intervention group ($3.5 [3-7]$ vs $6 [5-10]$ days, $p=0.05$).

Conclusion: In this open-label RCT, use of LECW resulted in less IV diuretic continuous infusion therapy, greater net reduction in lower extremity edema, reduced patient assessed HF burden, and shorter hospital LOS, with fewer rates of AKI. Trends toward fewer total days of IV diuresis, less escalation of diuresis, and greater reduction in edema were also observed.

Oral #11

Category: Research

Program: Henry Ford Health System – Detroit

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Sleep Duration, Baseline Cardiovascular Risk, Inflammation and Incident Cardiovascular Mortality in Ambulatory U.S. Adults

Introduction: The interplay between sleep duration and inflammation on the baseline and incident cardiovascular (CV) risk is unknown. We sought to evaluate the association between sleep duration, C-reactive protein (CRP), baseline CV risk, and incident CV mortality.

Methods: We used data from the National Health and Nutrition Examination Survey 2005-2010 linked with the cause of death data from the National Center for Health Statistics for adults aged ≥ 18 years. The associations between self-reported sleep duration and CRP, 10-year atherosclerotic CV disease risk score (ASCVD) and CV mortality were assessed using Linear, Poisson and Cox proportional hazard modeling as appropriate.

Results: There were 17,635 eligible participants with a median age of 46 years (interquartile range [IQR] 31, 63). Among them, 51.3% were women and 46.9% were non-Hispanic Whites. Over a median follow-up of 7.5 years (IQR 6, 9.1), 350 CV deaths occurred at an incident rate of 2.7 per 1000-person years (IQR 2.4, 3.0).

We observed a U-shaped associations between sleep duration and incident CV mortality rate (P -trend=0.011), sleep duration, and 10-year ASCVD risk (P -trend <0.001), as well as sleep duration and CRP (P -trend <0.001).

A self-reported sleep duration of 6-7 hours appeared most optimal. We observed that those participants who reported <6 (short sleep) or >7 hours (long sleep) of sleep had higher risk of CV death attributable to inflammation after accounting for confounders.

The population attributable fraction of inflammation (CRP ≥ 0.3 mg/dL) for CV mortality was 14.1% (95% CI 4.4, 22.9, $p < 0.05$) for short sleep, and 12.8% (95% CI 4.0, 20.8, $p < 0.05$) for long sleep vs. 11.2 (95% CI 3.6, 18.2, $p < 0.05$) for optimal sleep in the multivariable model

Conclusions: There was a U-shaped relationship of incident CV mortality, 10-year ASCVD risk, and CRP with self-reported sleep duration. These findings suggest an interplay between sleep duration, inflammation, and CV risk.

Program: Huron Valley DMC Medical Center

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Late Presentation of Autoimmune Encephalitis as Adverse Effect of PD-1 Inhibitor and Anti-CTLA4 Inhibitor Immunomodulator Therapy

Introduction

Combined immunomodulator therapy with PD-1 (programmed cell death ligand 1) inhibitors and anti-CTLA4 (cytotoxic T-cell lymphocyte associate antigen 4) inhibitors uncommonly have neurological side effects of meningoencephalitis. Here we report a case of encephalitis at unusual late stage of immunomodulator treatment.

Case Presentation

A 77-year-old woman undergoing treatment with immunotherapy for stage IV non-small cell lung cancer presents to the hospital with 1 week history of frontal headache, lower extremity weakness, photophobia, fever and confusion. She has been treated with nivolumab and ipilimumab for 10 months. Lumbar puncture reveals clear, colorless cerebrospinal (CSF) with red blood cells (RBC) 15 cells/cubic mm, white blood cells (WBC) 115 cell/cubic mm, elevated protein of 205 mg/dL, lactic acid 4.3 mMol/L and low glucose of 37 mg/dL CT head negative for mass effect/infective process; investigative studies negative for CNS infection/leptomeningeal carcinomatosis. The patient was diagnosed with autoimmune encephalitis secondary to PD-1 inhibitor therapy and started high dose steroid regimen with extended taper initiated. By day 5 of treatment the patient no longer had headache, "brain fog" and strength was improving. The patient's symptoms resolved by week 5 of therapy, albeit it complicated by steroid myopathy.

Discussion

Autoimmune encephalitis is a severe adverse effect of immunomodulator therapy. It is a grade 3-4 adverse effect that may present with symptoms such as headache, fever, fatigue, weakness, altered mental status, aphasia and agitation (Larkin et al., 2017). In a study of 3763 patients on immunomodulator therapy for treatment of malignant melanoma, 0.93% developed serious neurological side effects of meningitis, encephalitis, neuropathy and neuromuscular disorders (Larkin et al. 2017). Review of the literature details cases with symptom onset within days to the first 3 months of therapy. However, our case is an example of the propensity for immunomodulator therapy to also cause encephalitis in the late stages of therapy.

Oral #13

Category: Clinical Vignette

Program: McLaren Greater Lansing

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Angry Lungs and Obstructed Bowels Incite Heartbreak: A Unique Case of Takotsubo Cardiomyopathy

Takotsubo cardiomyopathy (TCM) involves reversible transient left ventricular apical akinesis in the absence of coronary obstruction due to stress-induced catecholamine release. Hospitalized patients are at risk of developing TCM due to physiological disease burden. TCM predominantly affects postmenopausal females and is often self-limiting. Interestingly, in males, TCM acquired during the hospital course is associated with higher composite cardiac events and increased mortality. Intra-abdominal triggers of TCM are rare in males, even in Asian countries where TCM is aggressively screened for. Here, we report a unique presentation of TCM in a 56-year-old male successfully recovering from pneumonia who suddenly developed TCM following acute bowel obstruction that led to unanticipated hemodynamic instability.

Case: A 56-year old male with COPD was admitted with pneumonia and COPD exacerbation. He gradually improved on antibiotics and bronchodilation however on day 10, developed intractable abdominal pain. CT-Abdomen demonstrated bowel obstruction near the splenic flexure and NG suction evacuated 2L of bloody output. Symptoms improved until he developed pleuritic chest pain. EKG showed ST-elevation in lateral leads and Troponins were severely elevated. Coronary angiography demonstrated apical dilatation without coronary obstruction. Although the diagnosis of TCM was initially reassuring, he unexpectedly developed worsening respiratory failure and shock, necessitating immediate transfer to the ICU where he continued to decompensate and was eventually transitioned to comfort care. Particularly in male patients, TCM acquired during hospitalization is associated with higher risk of adverse clinical outcomes. To our knowledge, this is the first case of TCM following bowel obstruction in a relatively younger hospitalized male. In line with growing evidence, this case supports that hospital acquired TCM in males is associated with increased mortality. Therefore, we recommend that new onset TCM in the hospital should prompt close monitoring and immediate transfer to the ICU at the earliest signs of hemodynamic compromise.

Program: McLaren Macomb

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A Moaning Man: A Rare Case of 1,25(OH)₂ Vitamin D Mediated Hypercalcemia in B-Cell Lymphoma

Malignancy-associated hypercalcemia is an important paraneoplastic syndrome that occurs in up to 20 to 30 percent of patients. Of those, hypercalcemia caused by lymphomas secreting the active form of vitamin D, 1,25-dihydroxyvitamin D, is an extremely rare etiology occurring in less than 1 percent of cases.

In this case, an 88-year-old male presented with altered mental status and a fall from standing the night prior to admission. Per the wife, the patient had been increasingly confused and quieter than normal for the last two weeks. In addition, his appetite had decreased, and he lost 14 pounds during those two weeks. At baseline, he had been able to perform activities of daily living independently. On physical examination, the patient appeared lethargic and confused. Laboratory workup revealed severe hypercalcemia of 14.7, low intact PTH of 7.8, high 1,25-dihydroxyvitamin D of 146, and low 25-hydroxyvitamin D of 16.1. CT imaging revealed a large left-sided heterogeneous soft tissue mass with left hydronephrosis. He was immediately started on aggressive intravenous fluids and treated with calcitonin and bisphosphonate therapy. Oncology recommended initiating corticosteroids for presumptive lymphoma which were continued at discharge. During his hospital course, the hypercalcemia improved markedly. Interventional radiology guided biopsy of the mass confirmed diffuse large B-cell lymphoma with a high proliferative index suggesting a more aggressive course. Due to his poor prognosis of less than one year, he was not a good candidate for remission induction treatment and the family elected to pursue subacute rehab with an eventual plan for outpatient hospice.

This case illustrates the importance of 1,25-dihydroxyvitamin D in evaluating hypercalcemia and the use of steroids in 1,25-dihydroxyvitamin D mediated hypercalcemia separate from their use in lymphoma treatment due to their inhibition of 1-alpha-hydroxylase which converts 25-hydroxyvitamin D to 1,25-dihydroxyvitamin D.

Oral #15

Category: Clinical Vignette

Program: McLaren Regional Medical Center/MSU/Flint

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Presenter: Govinda Adhikari

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A Case Report of Anabolic Androgenic Steroid Induced Reversible Dilated Cardiomyopathy

Background: Anabolic androgenic steroids (AAS), simply referred to as anabolic steroids are the most widely misused class of Appearance and Performance enhancing drugs (APEDs). AAS have been associated with number of Cardiovascular diseases including Coronary artery disease (both atherosclerotic and non-atherosclerotic), fatal arrhythmias, Cardiomyopathy, Hypertension, and stroke. The exact mechanism of how AAS cause Cardiomyopathy and other Cardiovascular diseases is still unknown.

Case Summary: 54-year-old Caucasian male with past medical History of phlebotomies for polycythemia presented to emergency department with progressive exertional shortness of breath and cough. On examination, he had bibasilar fine crackles with bilateral pedal pitting edema. Labs were significant for hemoglobin of 18.2 g/dl and BNPEP of 384 pg/ml. Influenza PCR was negative. Echocardiogram revealed increased left ventricular (LV) cavity size with normal thickness, dilated atria, severely decreased LV systolic function and global LV hypokinesia with no evidence of valvular heart disease. LV ejection fraction (EF) was estimated to be 15-20%. EKG showed atrial fibrillation with rapid ventricular response. He was started on IV Lasix, IV heparin, IV Amiodarone; Lisinopril and Metoprolol were added later. Cardiac catheterization revealed angiographically normal coronaries. He underwent catheter ablation for his persistent atrial fibrillation. Further workup revealed elevated free (810.5 ng/dl) and total testosterone levels (2060 ng/dl). Iron studies, electrolyte panel, TSH, autoimmune, vasculitis, paraprotein screen were normal. Erythropoietin was elevated with negative JAK 2. He was discharged on Aldactone, Lisinopril, Metoprolol, Amiodarone, Eliquis and life vest. Follow-up echocardiogram after one year showed improved ventricular dimension and systolic function with LVEF of 45-50%.

Discussion: Anabolic steroids can lead to various alterations in heart structure and function, namely, myocardial hypertrophy, increased heart chamber size, impairment of contractile and relaxation function. There is increasing prevalence of misuse of AAS among young recreational weightlifters. Further studies are warranted for appropriate diagnosis and management.

Oral #16

Category: CQI/EBM

Program: McLaren Regional Medical Center/MSU/Flint

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Presenter: Haymanot Gebre

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QI Project to Improve Internal Medicine (IM) Residents' Knowledge about Cervical Cancer Screening at McLaren-Flint (MSU)

Introduction: Cervical cancer screening is a cornerstone preventive measure that impacts women's health significantly. Since screening guidelines have changed to increase interval between pap smears, this knowledge may be diminished among learners. This Quality Improvement project targets to improve IM residents' knowledge by 10% from baseline as measured by a difference between a pre- and post-targeted educational intervention.

Methods: The first Plan-Do-Study-Act (PDSA) cycle of our QI project was primarily focused on Improving knowledge regarding cervical cancer screening. A standardized knowledge questionnaire was completed by all residents at baseline, pre-intervention. Residents were assigned an article addressing updated cervical cancer screening guidelines which was discussed by faculty preceptors in small groups. An hour-long lecture presentation was made on updated screening guidelines and review of available evidences. The same questionnaire used to assess post educational intervention knowledge score. Participant scores graded out of 4, entered into a data collection spreadsheet and analyzed using SPSS statistical software. Aggregate and mean score values were calculated before and after targeted educational intervention. Difference in mean values pre- and post-intervention were compared using paired t-test to evaluate significance of change in knowledge.

Result: A total of 36 IM residents participated in the project, with an 80% response rate. Pre-intervention aggregate knowledge score was 88 with a mean and standard deviation of 3.03 ± 0.94. The post-intervention aggregate knowledge score increased to 109, with a mean and standard deviation of 3.76 ± 0.43. The mean post intervention knowledge score increased by 23.8% from our baseline, with a paired t-test showing a p-value of 0.00013.

Conclusion: Knowledge of cervical cancer screening guideline among IM residents improved significantly by 23% from baseline following educational intervention. This improvement demonstrates effectiveness of targeted educational interventions and hence our recommendation to integrate such approach into IM residents' curricula.

Oral #17

Category: CQI/EMB

Program: Michigan State University - East Lansing

Director: Supratik Rayamajhi, MD, FACP

Presenter: Rohan Prasad

Additional Authors: Tyler Kemnic, Muhammad Nabeel

Streamlining Resident-Nursing Communication on Academic Hospitalist Service

We conducted a quality improvement project surveying 35 nurses and 36 residents on our Internal Medicine teaching service to determine the preferred communication method for routine and urgent floor issues. An urgent scenario was: new, acute clinical issues that required urgent attention to immediately change the treatment plan or clinical outcome. Routine issues were defined as: items needed for the patient that do not immediately change the treatment plan or clinical outcome. Residents were stratified according to training year, asked their preferred means of contact for urgent/routine issues (page with call back number only, page with call back number and message, or epic chat), and asked how they preferred to reply to the nurses (phone call, epic chat or handling the issue/placing orders without replying). The nurses were stratified based on floor unit, asked how they preferred to contact residents for urgent/routine issues (pager with call back number only, page with number and message, or epic chat), and asked their preference for the resident to respond (phone call, epic chat, handling the issue/placing orders). For urgent issues, the preferred method determined was nurse paging with a message and the resident calls back the nurse. For routine issues both residents and nurses preferred epic chat. Based on the survey results, we started an interventional phase (November 2020 - November 2021) to implement the preferred methods of communication. To create awareness a handout, email reminders, and weekly presentations were given to the residents and nurses. We are currently two months into the intervention phase and the initial feedback is very positive showing improved communication flow between the residents and nurses. We are planning on conducting mid- and post-intervention surveys to evaluate compliance and effectiveness of the preferred communication method.

Oral #18

Category: Research

Program: Michigan State University - East Lansing

Director: Supratik Rayamajhi, MD, FACP

Presenter: Yasser Radwan

Additional Authors: Abdullah Al-abcha, MD; Majid Yavari, MD; Akhil Sharma, DO; Si Yuan Khor, MD; Rohan Prasad, DO; Supratik Rayamajhi, MD

Direct Oral Anticoagulants versus Vitamin K Antagonists in the Treatment of Left Ventricular Thrombi

Introduction:

Direct oral anticoagulants (DOACs) have a well-established role in the treatment of deep vein thrombosis and pulmonary embolism and in the reduction of thromboembolism in non-valvular atrial fibrillation. However, limited evidence supports their role in patients with left ventricular thrombi.

Methods:

The PubMed, EMBASE, and Cochrane databases were searched for relevant articles and abstracts published from inception to 1 February 2021. We included studies evaluating the effect of DOACs versus vitamin K antagonists (VKAs) in patients with left ventricular thrombi. The primary outcome was thrombus resolution, and the secondary outcomes were major bleeding and stroke or systemic embolization (SSE).

Results:

Twelve retrospective observational studies and two randomized-control trials (RCT) were included, with a total of 2395 patients. VKAs and DOACs had a similar rate of thrombus resolution (odds ratio [OR] 1.22; 95% confidence interval [CI] 0.79–1.88; $p = 0.36$). Our analysis also demonstrated a similar rate of major bleeding (OR 0.87; 95% CI 0.55–1.39; $p = 0.57$) and SSE (OR 0.88; 95% CI 0.56–1.38; $p = 0.57$) between the two treatment groups.

Conclusion:

To our knowledge, this is the first meta-analysis to include RCTs. In patients with left ventricular thrombi, DOACs and VKAs are associated with similar rates of thrombus resolution, major bleeding, and SSE.

Program: Michigan State University - East Lansing

Director: Supratik Rayamajhi, MD, FACP

Presenter: Mohammad Fahad Salam

Additional Authors: Christopher Garces MD, Merryl Varghese MD, Mahmoud Abdelsamia MD, Brian Nohomovich, Nazia Khan MD

Severe Extensive Early Presentation of Linear IgA Bullous Dermatitis Successfully Treated with Systemic Steroids: A Case Report

Introduction: Linear bullous IgA dermatosis (LABD) is a rare autoimmune disorder with adult presentation after 60 years old. Diagnosis relies on linear IgA deposition and neutrophilic infiltrate on histopathology and vesiculobullous skin eruptions with rare mucosal involvement. Steroid-sparing immunosuppressive agent, dapsone, is first-line treatment, with limited literature supporting alternative steroid-based options.

Case discussion: We present the case of a 43-year-old male with history of asthma and atrial fibrillation. He presented with new-onset vesiculobullous rash associated with burning pain which started in the groin 2 days prior and became progressively worse with lesions on his hands, feet, and lower lip mucosal surface. His physical examination revealed tense vesicles and bullae with a negative Nikolsky sign. He denied exposure to any new medications. CBC, CMP and extensive infectious diseases workup was negative. ESR was 17 mm/h and ANA was negative. A punch biopsy of a lesion and the surrounding skin showed a linear band of IgA along the dermo-epidermal junction and the papillary dermis containing nuclear dust of neutrophils. Patient was empirically treated with intravenous acyclovir without any response. Glucose-6-phosphate dehydrogenase (G6PD) assay was obtained in anticipation of starting dapsone due to the risk of hemolytic anemia. While awaiting G6PD results, systemic steroids were started. The lesions significantly improved on systemic steroids and he was discharged 2 days later. On 1-week outpatient follow-up, complete resolution of vesicles and bullae was noted.

Conclusion: LABD in a 43-year-old male is an early and rare presentation. Our patient met the diagnostic criteria for LABD and had mucosal involvement. Even though dapsone is the first line of treatment, our patient responded only to systemic steroids. This case plays a role in the education of clinicians for a possible early and severe presentation of LABD and establishes the role of only systemic steroids for LABD treatment.

Program: Spectrum Health – Grand Rapids

Director: Talawnda Bragg, MD, FACP

Presenter: Eric Lee

Additional Authors: Mohammed Al-Charakh MD, Joseph Pitcher MD

A Complex Case of Pulmonary Embolism and Pericardial Tamponade from Catastrophic Anti-Phospholipid Syndrome (CAPS)

Massive pulmonary emboli and pericardial tamponade are independently severe conditions that can necessitate intensive care needs. They are rare to present simultaneously and literature review highlights only a few cases that were provoked from an underlying physiology.

This report details a 35-year-old male with history of anti-thrombin III deficiency with recurrent pulmonary emboli, non-compliant with anti-coagulation, who presented with dyspnea. Workup revealed intermediate-high risk pulmonary embolism and he was started on anti-coagulation. An initial attempt at catheter-directed mechanical thrombectomy was complicated by decompensation and respiratory arrest requiring intubation and shock. Bedside echocardiogram showed a large pericardial effusion with cardiac tamponade. He underwent a pericardiocentesis with removal of 1.9L sanguineous fluid. Despite this, he continued to require high vasopressors and a Swan-Ganz catheter revealed critically low-output with a cardiac index of 0.7L/min/m². He was then placed on veno-arterial extracorporeal membrane oxygenation (ECMO). Hypercoagulability workup pursued due to frequent clotting of the ECMO cannula despite anticoagulation and revealed positive ANA, cardiolipin IgM, elevated lupus anti-coagulant, which was consistent with catastrophic anti-phospholipid syndrome (CAPS). He was treated with glucocorticoids and was not a candidate for plasmapheresis with limited access. Despite therapy, he continued to have thrombosis and required additional circulatory support with a LV Impella device. The patient was not a candidate for pulmonary thromboendarterectomy. Given continuous deterioration despite maximum medical support, family elected to withdraw care.

CAPS is a rare but serious condition with a mortality rate near 50%. Diagnosis involves multiple simultaneous thrombotic events within a week and antiphospholipid antibodies and the presence of lupus anticoagulant. Thrombotic events often occur despite anticoagulation. Standard treatment consists of heparin, high-dose systemic glucocorticoids, and can include plasmapheresis and Intravenous immunoglobulin therapy. Early detection is critical and when multiple thrombi are present, CAPS should be considered.

Oral #21

Category: CQI/EBM

Program: St. Joseph Mercy - Ann Arbor

Director: Patricia McNally, MD, FACP

Presenter: Sri Jasti

Additional Authors: Aarthi Manjunathan, Corey Dean, Afnan Ammar

Do Telehealth Visits Have a Similar Patient Satisfaction Rate Compared to Office Visits?

Introduction: During the COVID-19 pandemic, our concern for patient and physician safety grew. Therefore, alternate methods of conducting medical visits were sought out. Telehealth was introduced in April 2020 in the form of voice calls and video visits at our community based internal medicine resident clinic. The goal was to evaluate patient satisfaction in telehealth visits compared to in person visits at the clinic to determine if telehealth is a useful tool that could be used even after the pandemic.

Methods: A team consisting of attendings, residents, medical students, and practice manager began this quality improvement project. A 10-question verified telehealth questionnaire was built using two established research articles, "Development, Validation, and Use of English and Spanish Versions of the Telemedicine Satisfaction and Usefulness Questionnaire" and "Using survey methods in telehealth research: A practical guide". An existing patient satisfaction questionnaire was used for office visits. A random number generator was used to select 20 patients to be surveyed for both telehealth and office visits.

The scale was 5 stars and only top box (5/5) responses were used in our study. 4 questions that were most similar in both surveys were compared between telehealth and office visits and data formulated into a histogram.

Results: Comparing Telehealth vs office visits, the overall visit satisfaction was 4.6/5 vs 3.9/5, ease of obtaining appointment 4.6/5 vs 4.5/5, satisfaction with level of care provided 4.6/5 vs 4.1/5, and wait time/time saved 4.2/5 vs 4.1/5 (see Figure 1).

Discussion: Telehealth did not lead to a drop in the quality of the visit and in fact higher satisfaction was seen, which may be due to ease of obtaining the appointment. A future QI study will need to be done for insight into whether patient preferences have changed since the pandemic has become a long-term phenomenon.

Program: University of Michigan - Ann Arbor

Director: John DelValle, MD, FACP

Presenter: Mary Finta

Additional Authors: MaddyBreedon MD, Jeff Rohde MD

A Question of Congestion

Renal cell carcinoma (RCC) has been referred to as “the internist’s tumor” due to the myriad of presenting symptoms. The variation in presentation makes RCC a diagnostic dilemma, particularly when there is hepatic dysfunction.

A 58-year-old man with a recent diagnosis of cryptogenic cirrhosis was admitted with right-sided abdominal pain, fatigue, and lower extremity edema of six weeks’ duration. Imaging showed an acute left lower extremity deep vein thrombosis extending into the inferior vena cava (IVC). An infiltrative right renal mass with associated large volume tumor thrombus involving the right renal vein to the right atrium was discovered, as well as severe congestive hepatopathy from venous outflow obstruction with sequelae of cirrhosis, including ascites and varices. Transvenous biopsies of the IVC thrombus revealed RCC of an indeterminate subtype. Treatment with radical right nephrectomy and IVC thrombectomy were planned; however, prior to surgery, the patient suffered an acute subdural hematoma with neurological compromise, and he died in inpatient hospice.

This case illustrates a unique cause of hepatic dysfunction from RCC. Hepatopathy from RCC typically results from metastatic disease, venous invasion, or the paraneoplastic Stauffer syndrome, which is defined as liver dysfunction with distinct absence of metastatic liver deposits in the presence of RCC. This is likely due to increased cytokine production and overexpression of IL-6. As evidenced from this case, hepatic derangements can also result from vascular congestion and can lead to cirrhotic physiology in extreme cases. Recognition and respect for the wide variety of mechanisms by which RCC can lead to liver dysfunction is crucial for initiation of appropriate diagnostic workup and treatment of this ambiguous ailment.

Oral #23

Category: Research

Program: University of Michigan - Ann Arbor

Director: John DelValle, MD, FACP

Presenter: Victoria Scicluna

Additional Authors: Mary Finta, MD, Kelcey Stratton, PhD, Rachel Perlman, MD

Reducing Resident Barriers to Mental Health Care Through a Pilot Opt-Out Well-Being Coaching Program

Background: Resident physicians experience higher rates of poor mental health outcomes including depression, anxiety, and suicide, as compared to their peers. Additionally, rates of resident burnout have been reported above 50%, which is likely an underestimation in the COVID era. Burnout and depression have been associated with higher rates of medical errors. Thus, resident mental health is important not only for trainees, but also affects patient care and health care systems. Unfortunately, residents often experience barriers to accessing mental health care due to lack of time, perceived stigma, confidentiality concerns, and low awareness of available services.

Methods: A pilot opt-out well-being coaching program was implemented at one large, academic internal medicine training program to address these barriers. All available interns were scheduled during protected time on outpatient or elective rotations for one session with a licensed psychologist. The session consisted of a brief assessment, identification of stressors, discussion of well-being goals, and referral to further services as indicated. The primary goal of this pilot was to establish feasibility and gauge satisfaction among participants.

Results: Since July 2020, 68% (25/37) of scheduled interns attended their well-being coaching sessions. Post-intervention survey response rate was 56% (14/25). 100% (14/14) of respondents strongly or somewhat agreed that the session was valuable for their personal or professional life, and 100% (14/14) were extremely or somewhat likely to reach out to available mental health services in the future if they needed assistance. 93% (13/14) recommended continuation of the program.

Conclusion: A pilot opt-out well-being coaching program was successfully implemented at one internal medicine residency program. This program was universally valued by participating interns and represents a valuable strategy to reduce barriers to mental health care, without detracting from training program requirements.

Oral #24

Category: CQI/EBM

Program: University of Michigan - Ann Arbor

Director: John DelValle, MD, FACP

Presenter: Sang Gune Yoo

Additional Authors: Mehwish Ahmed, Theresa Anderson, Vanessa Scowden, Rachel Perlman

Compassion Rounds: Implementing a Bias Literacy Curriculum at a Large Internal Medicine Residency Program

BACKGROUND: Implicit and structural biases create a system that favors certain populations over others, which adversely influence the health of minority and underserved populations. To improve training on these biases within our residency program, we developed a curriculum titled 'Compassion Rounds' to address these biases.

METHODS: We performed a general needs assessment via literature review and one-on-one interviews. An anonymous targeted needs assessment survey was sent to our approximately 180 residents with a 46% response rate. Core investigators then began to develop sessions based on the responses. Educational strategies included interactive didactics and case discussions. Pre-curriculum and post-session surveys were submitted for evaluation of the curriculum

RESULTS: The pre-curriculum survey leading topics were drug addiction, socioeconomic status, gender, gender identity, race, and mental health and disabilities. 42% of respondents preferred noon conference sessions, 21% preferred morning report and 19% preferred team learning sessions during ambulatory blocks. The most popular mode of learning was small group discussions (44%) followed by didactics (26%). Our pre-curriculum survey had a response rate of 52%. 80% believed that education on implicit and structural biases is important for health care providers. 78% were either interested or may be interested in learning more. In comments, many respondents were interested in the topic however some felt prior training had not provided practical implementation strategies.

CONCLUSIONS: Implementing a bias literacy curriculum in a large Internal Residency program requires the input of the residents. We intend to send a post-curriculum survey to evaluate perceived usefulness, commitment to change, knowledge, and feedback. We aim to create a three-year curriculum for continued training and plan to share our findings with other residency programs to promote health equity learning nationally.

Program: Wayne State University – Detroit

Director: Eric Ayers, MD, FACP

Presenter: Abraham Hussein

Additional Authors: Sarah Nasser, Shirisha Pasula, Avnish Sandhu

The Zoster Imposter: A Case of Cutaneous Metastatic Pancreatic Adenocarcinoma

Cutaneous metastasis from pancreatic cancer is rare; the most predominant manifestation is metastasis at the umbilicus. Non-umbilical cutaneous metastatic cases have been observed, however are infrequent. Our case involved a patient with pancreatic adenocarcinoma in remission for approximately four years prior to the discovery of cutaneous metastasis to the axilla. A prompt recognition of this entity is imperative to reduce the risk of delaying treatment and administering improper treatment.

A 71-year-old male with a history of pancreatic adenocarcinoma at the ampulla of Vater status-post Whipple surgery and chemoradiation in 2016 presented with persistent left axillary rash pain. A month prior, he was diagnosed with shingles and completed a 5-day course of valacyclovir. He continued to have persistent pain for which he visited multiple outside facilities, and was prescribed multiple pain regimens including acetaminophen-hydrocodone, gabapentin, tramadol, and ibuprofen for postherpetic neuralgia. Despite this aggressive regimen, his pain persisted hence he presented to our institution. On physical examination, we noted a T2 dermatomal rash with erythematous and skin colored papules superimposed on a larger hyperpigmented indurated plaque, extending from the left lateral breast to the upper lateral back. A photograph of initial rash showed the absence of vesicles as expected with shingles. A skin biopsy then revealed moderately differentiated adenocarcinoma from pancreatobiliary origin. Elevated blood markers, CA19-9 at 13,189 and CA125 at 591.4, suggested cancer recurrence. CT abdomen/pelvis and MRCP showed signs of recurrent neoplastic process with biopsy of the proximal jejunum confirming recurrent adenocarcinoma. This case presented a clinical challenge given the dermatomal pattern consistent with shingles. Delay in diagnosis led to overprescribing of pain medications and delayed initiation of appropriate treatment. Cutaneous manifestation of pancreatic cancer should be considered as a differential diagnosis for unknown skin lesions when other signs of tumor recurrence are present, such as elevated tumor markers.

Program: Wayne State University – Detroit

Director: Jarrett Weinberger, MD, FACP

Presenter: Aliza Rizwan

Additional Authors: Huyam Awadalla, Neel Patel, Patrick Bishop

An Educational Innovation: An Inaugural Virtual Celebration of Black History Month to Highlight Value of Diversity in Medicine

The Institute of Medicine's (IOM) report, "Unequal Treatment", reveals that racial and ethnic minorities receive worse health care than non-minorities and that both explicit and implicit bias play potential roles. Although composing 12% of the population, only 5% of the U.S. physicians are African American. Despite being underrepresented and marginalized, African American physicians and scientists have consistently helped to redefine the practice of medicine through research, service, and advocacy. We posit that raising the awareness of the contributions of African Americans in medicine & science will serve to interrupt implicit biases against African Americans as well as demonstrate the value of a diverse physician workforce. As part of an innovative Wayne State University Health Equity and Justice in Medicine lecture series, we present the experience of an educational session aimed at celebrating these achievements.

To honor Black History Month, 5 internal medicine residents presented the personal biographies of 10 African American medical pioneers to an audience of 93 consisting of colleagues and community members. The session included a keynote speaker who provided a historical overview of the role of African American physician scholars at our institution, city, and state. The session was concluded by a closing speaker who highlighted the significance of learning about these pioneers to our current practice and with emphasis on improving diversity and representation in medicine.

A poll demonstrated that 47% of participants felt they had low or very low confidence in knowledge of Black contribution to medicine. Post presentation, 96% of participants rated their confidence as high or very high, demonstrating a significant increase in awareness. We argue that similar sessions may be a future necessity to all medical education programs in the country as an important way to highlight the value of diversity to medicine and serve to decrease bias which can impact health disparities.

Program: Wayne State University – Internal Medicine – Rochester Hills

Director: Sarwan Kumar, MBBS, FACP

Presenter: Mishita Goel

Additional Authors: Ankita Aggarwal, Warda Zaidi, Vesna Tegeltija

COVID-19 Prognosis in Patients with Underlying CKD and Kidney Related Complications

Kidney injury, including acute kidney injury (AKI), proteinuria and hematuria, has been a reported in COVID-19 patients. The extent of renal involvement has not been extensively correlated with prognosis and outcomes in COVID-19 patients.

Retrospective chart review including patients aged 18 years and older, admitted to a community hospital from March 15, 2020 to April 15, 2020, testing positive for COVID-19. Patient characteristics on admission were collected which included presence of AKI, hematuria, proteinuria and underlying CKD stage, if any. Outcomes included intubation rate, ICU admission, length of stay and inpatient-mortality. Continuous variables were compared using independent t-test. Chi square test was used to test relationships between categorical variables.

A total of 212 charts were studied. Patients with hematuria on admission had significantly higher rates of intubation (37.3% vs 20%, $p=0.028$) and ICU admissions (44% vs 26.7%, $p=0.037$) compared to those who did not have hematuria on admission. Length of stay was also significantly higher in patients who had hematuria on admission compared to those who did not (10 ± 8 vs 7 ± 6 days, $p=0.042$). AKI and proteinuria on admission resulted in no significant difference in intubation, ICU admission, length of stay or inpatient mortality. No significant difference in length of stay, intubation and ICU admission was found in patients with underlying mod-severe CKD compared to those who didn't.

Early renal involvement and underlying CKD worsen prognosis of COVID-19 pneumonia and result in higher mortality outcomes. Such patients, especially those with findings of hematuria on admission, need closer monitoring. Furthermore, many COVID-19 patients receive steroids and anticoagulants as part of treatment regimen which will need to be further evaluated as these therapies may contribute to further damage of the kidneys.

Oral #28

Category: CQI/EBM

Program: Wayne State University – Internal Medicine – Rochester Hills

Director: Sarwan Kumar, MBBS, FACP

Presenter: Bernadette Schmidt

Additional Authors: Gonzalez, V., Taheri Abkouh, D., Kulairi, Z., Kumar, S.

Intensive Care Unit Transition of Care

Problem: Transition from the ICU to the medical wards has been identified as a critical period for streamlined communication in order to avoid potential harm due to medical errors, as the lack of a universal standardized hand-off could lead to detrimental consequences. This increased risk for adverse events is thought to be a multisystem failure due to the lack of standardization of the communication. Our aim is to create a hand-off template when transferring a patient from ICU to Wards with a goal of incorporating this tool in 25% of cases in the first month.

Methods: An observation was made that there was no standard process for physicians when handing-off patients from the ICU to Wards. The persons involved, process, policy, and communication were identified as contributing factors in formulating a standardized TOC process. A template was formulated, which serves as a short summary of key components of patient's ICU course. Residents, Faculty, ICU attendings and the ICU committee were educated on the implementation of the new macro-TOC template with the goal of a 25% use of the template in the first month.

Findings: Of all ICU cases reviewed from 11/2019-12/2019, 0% revealed any form of hand-off documented at the time of patient transfer out of the ICU. After formulating the template, educating users and implementing its use in 2/2020: charts of 65 patients admitted to the ICU from 2/2020-3/2020 were reviewed and had achieved an increase of 53.8% of documented provider to provider communication during transfer of patients from ICU to Wards. Implementation of this TOC tool magnified the need for medication reconciliation from ICU to Wards. This will be the future PDSA cycle with involvement of the ICU Pharmacist, with the intent to standardize the process centered around safe and effective communication in the patient TOC paradigm.

Program: Western Michigan University

Director: Joanne Baker, DO, FACP

Presenter: Muhammad Ali Akbar

Additional Authors: Muhammad Ebad Rehman, Dilpat Kumar, Prashant Patel

A Rare Case of Calcific Arteriopathy in a Non-Uremic Patient

Introduction

Calciphylaxis is a critical illness commonly seen in dialysis-dependent patients, marked by calcium deposition in small blood vessels resulting in painful necrotic skin lesions. We describe a case of non-uremic calcific arteriopathy (calciphylaxis) in a patient without end-stage renal disease.

Case Description

A 78-year-old female with past history of chronic kidney disease stage IV, atrial fibrillation and sarcoidosis presented with a right thigh ulcer for 2 months. Her medications included adrenocorticotrophic hormone gel for sarcoidosis and warfarin. On presentation, her vital signs were stable. Her skin was remarkable for a 3 x 2 cm anteromedial right thigh ulcer covered with necrotic eschar. Notable labs were Cr 1.4mg/dl (baseline 1.5-2.0), eGFR 36 ml/min, calcium 9.6mg/dl, phosphorus 2.5mg/dl, PTH 97.7pg/ml and INR 1.4. Computed Tomography of her lower extremities demonstrated diffuse subcutaneous edema, severe vascular calcification throughout both legs without gas formation. Intravenous cefazolin was initiated given concern for soft tissue infection. In addition, punch biopsy of ulcer was performed as there was strong suspicion for calciphylaxis based on clinical appearance. Her inpatient stay was complicated with worsening ulcer size, encephalopathy, atrial fibrillation with rapid ventricular rate and hypotension. Surgery recommended against debridement due clinical deterioration which prompted goals of care discussion and transition of care to hospice. The skin biopsy results post-mortem confirmed calciphylaxis.

Discussion

Calciphylaxis can be seen in patients with non-dialysis dependent chronic kidney disease. Common risk factors include obesity, autoimmune conditions, drugs (especially warfarin and systemic steroids), hyperphosphatemia, hyperparathyroidism, malignancy and hypercoagulable states. Although there are no case reports on adrenocorticotrophic hormone association with calciphylaxis, the consequent corticosteroid production is a plausible risk factor. Treatment primarily includes discontinuation of offending drug, wound care and giving trial of sodium thiosulphate therapy. As our patient's case highlights, despite early recognition, the mortality and morbidity remain high from calciphylaxis.

Program: Western Michigan University

Director: Theotonius Gomes, MD, FACP

Presenter: Ahsan Alam

Additional Authors: Dilpat Kumar MD, Theotonius Gomes MD, Douglas J Wunderly

A Case of COVID-19 Myocarditis Presenting as Inferior Wall MI

Myocarditis is becoming a more recognized complication of COVID-19 with a recent uptrend in cases around the world. This mostly affects individuals with comorbid conditions with a mean age of diagnosis of 50.4 years. Despite a recent increase in the number of COVID-19 related myocarditis, only a handful of cases in North America have been identified in younger individuals, especially with findings consistent with STEMI on electrocardiogram.

A 21-year-old man with no significant past medical history presented with sudden onset sharp, substernal, non-radiating chest pain of 30 minutes duration. He reported no associated fever, shortness of breath, dizziness or lightheadedness. He was diagnosed with COVID-19 infection two weeks prior to presentation. Initial work-up in ED showed sinus bradycardia with 2 mm ST elevation in inferior leads along with elevated troponin of 52 ng/L. Chest x-ray was unremarkable. Aspirin, ticagrelor, atorvastatin and bivalirudin was started. Emergent coronary angiography showed mildly impaired left ventricle systolic function with non-occlusive coronary arteries. A cardiac MRI showed hypokinesis of the inferior wall of the left ventricle, consistent with acute myocarditis. An echocardiogram at four weeks follow-up showed mild/moderate LV systolic dysfunction with EF of 45%. Patient was started on carvedilol and captopril, with complete resolution of symptoms reported on subsequent visit.

COVID-19 related myocarditis has seen recent upward trends; however, little is known about the pathophysiologic mechanisms. Likely possibilities include a combination of direct viral injury as well as cardiac damage secondary to the host's immune response. Diagnosis is based on clinical findings including changes in EKG and cardiac biomarkers with impaired cardiac performance on echocardiography and/or cardiac MRI. EKG is non-sensitive for diagnosis and can present with variable findings including bundle branch block, QT prolongation, bradyarrhythmia with advanced atrioventricular nodal block and ST elevation or depression, which can be confused as acute myocardial infarction.