2023 1ST ANNUAL RESEARCH SYMPOSIUM

9 a.m. to 3 p.m.
May 24, 2023
WK Eye Institute Auditorium

Keynote Speaker:
Dr. L. Keith Scott
Professor of Pediatrics, Surgery & Medicine

Topic:
"Clinical Research: My Scars and Stars"

Target audience for this event includes students, trainees, faculty, and anyone interested in becoming more involved and knowledgeable about research opportunities at Willis-Knighton Health System.

9 a.m. – Coffee and refreshments
9:30 a.m. – Opening remarks
10 a.m. – Podium presentations
Noon – Keynote speaker and lunch
1 p.m. – Poster presentations
2 p.m. – Rapid Fire posters
3 p.m. – Awards and closing remarks

WILLIS-KNIGHTON
GRADUATE MEDICAL EDUCATION

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For more information, contact:
Krystle Trosclair, PhD
GME Research Director
ktrosclair@wkhs.com

WK GME Research Symposium Program

May 24, 2023

9:00am	Coffee and Refreshments	WK Eye Institute Auditorium
9:30am	Opening Remarks Dr. Hosein Shokouh-Amiri Dr. Neeraj Singh Dr. Gazi Zibari Dr. Krystle Trosclair	WK Eye Institute Auditorium
10:00am	Podium Presentations *Moderators: Dr. Neeraj Singh and Dr. Hosein Shokouh-Amiri*	WK Eye Institute Auditorium

Arpita Pawa Internal Medicine (PGY-1)
Review of ECMO bridge at the time of Heart transplant after 2018: UNOS data

Avery Daily General Surgery (PGY-2)
Incidence of Triple Negative Breast Cancer in Louisiana

Natasha Santosh Internal Medicine (PGY-1)
Outcomes associated with ECMO bridge at the time of Lung Transplant: UNOS database 2015-2022

Cole Evensky General Surgery (PGY-1)
Comparison of laparoscopic vs robotic cholecystectomy: a single institution's experience with economic feasibility and measures of outcome

Saloni Savoni Internal Medicine (PGY-1)
Renal cell carcinoma incidence, outcome, risk factors and recommendation for prevention in transplant population

Aaron Miner Arkansas College of Osteopathic Medicine (OMS III)
The Protect Trial: A Cluster Randomized Clinical Trial of Universal Decolonization with Chlorhexidine Bathing and Nasal Povidone Iodine Versus Standard-of-Care for Prevention of Infection and Hospitalization among Nursing Home Residents

12:00pm	Lunch and Keynote Address	WK Eye Institute Auditorium

Dr. L. Keith Scott Professor of Pediatrics, Surgery and Medicine
Clinical Research: My Scars and Stars

1:00pm	Poster Presentations	WK Eye Institute Lobby
2:00pm	Rapid-Fire Poster Presentations	WK Eye Institute Auditorium
3:00pm	Awards and Closing Remarks	WK Eye Institute Auditorium

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Podium Presentation Abstracts

Arpita Pawa Internal Medicine (PGY-1)
Review of ECMO bridge at the time of Heart transplant after 2018: UNOS data

The new heart allocation policy was implemented in October 2018. Under this policy, priority was given to more critical patients for early transplant especially patients on Extra Corporeal Membrane Oxygenation (ECMO) support compared to patients using ventricular assisted devices (VAD). Previous studies, thus far, have focused on waiting list outcomes of patients on VAD and short-term (6 months and 1 year) outcomes of ECMO bridge recipients. However, limited literature is available on long term outcomes. With this study, we aim to review outcomes of patients on the ECMO support at the time of transplant as compared to non-ECMO group patients. Method: This was a retrospective cohort study including all adult heart transplant recipients between 2018-2022 from the UNOS/OPTN database. Simultaneous other organ transplants and recipients with missing outcome information were excluded from the study. Cohort was stratified by the use of ECMO at the time of Heart transplant. Baseline characteristics were measured using chi2, t-test and Kruskal Wallis test for categorical and continuous variable, respectively. Patient survival was compared using Kaplan Meier curve and log rank test. Results: A total of 15,319 patients were included in this study, of them 774 (5.0%) were on ECMO bridge at the time of Heart transplant. In the ECMO group, the patient population was relatively younger with less proportion of Hispanics. A low proportion of them were on VAD or IABP support prior to transplant and a small proportion of them received heart from extended criteria donor. The ECMO cohort also had a higher percentage of males, and patients requiring ventilator and ionotropic support along with dialysis both pre- and post-transplant. Similarly, mean pulmonary artery pressure and BMI at the time of transplant were significantly higher in ECMO group. Median patient survival (365 (IQR: 125 – 737) vs 590 (195 – 1081) days, $p<0.001$) time was significant lower in ECMO group compared to non ECMO group. Conclusion: Following the change in guidelines, around 5.0% of patients received heart transplant while on the ECMO bridge. In spite of younger age cohort with less use of ventricular assisted device these patients required dialysis support perioperatively and had higher mortality compared to non ECMO group. In addition, analysis of simultaneous kidney and heart transplants revealed overall poorer survival, particularly within the first year, when compared to no intervention.

Avery Daily General Surgery (PGY-2)
Incidence of Triple Negative Breast Cancer in Louisiana

Aside from skin cancer, breast cancer is the most common cancer in American women. More specifically, one in eight women will develop breast cancer during their lifetime. Tumors lacking hormone receptors are classified as triple negative breast cancer (TNBC) and are known to have a poor prognosis. TNBC represents 10%–20% of invasive breast cancers and has been associated with African-American race, deprivation status, younger age at diagnosis (most frequently in women ages 40-50), more advanced disease stage, higher grade, high mitotic indices, family history of breast cancer and BRCA1 mutations1. TNBC carries a poorer prognosis, shorter survival, and unresponsiveness to hormone therapy compared to other forms of breast cancer2. Plasilova et al found the West South-Central Region of the United States (Texas, Louisiana, Oklahoma, and Mississippi) to have the second highest incidence in the United States. The etiology of TNBC remains largely unknown, and there are few epidemiologic studies regarding TNBC.

The primary aim of this study is to compare incidence of TNBC in Louisiana to a national population. The Louisiana Tumor Registry (LTR) was utilized to obtain state and national level data. The LTR is a participant of the National Cancer Institute's Surveillance, epidemiology and End Results Program, and the Centers for Disease Control and

Prevention's National Program of Cancer Registries. Our study evaluated women in Louisiana diagnosed with TNBC from 2010-2019. TNBC positive population was subdivided by parish and age at time of diagnosis. Statistical analysis was performed with GraphPad Prism software version 9.5.0. Bivariate comparisons were performed with chi-square analysis. Rates listed per 100,000, and p values <0.05 were considered significant. Our results show that Louisiana has a significantly higher rate of TNBC than the rate of the United States overall (18.2 vs. 13.6, p=0.0099). Interestingly, when compared to state data, Caddo Parish only shows a significantly higher rate of TNBC in ages 50+ (51.8 vs. 43.9, p=0.0106), but not for ages 0-49 (7.1 vs. 8.4, p=0.2964). This poses the question, why do women Caddo Parish have higher incidence of TNBC >50 compared to Louisiana and the nation? A potential cause could be due to healthcare disparities including lack of access to proper screening. Further studies should be done including evaluation of TNM staging at diagnosis. If patient's >50 years of age present with advanced tumors at time of diagnosis, this could be catalyst for increasing access to mammography and earlier detection in these populations.

Natasha Santosh Internal Medicine (PGY-1)
Outcomes associated with ECMO bridge at the time of Lung Transplant: UNOS database 2015-2022

Introduction: Extra corporeal membrane oxygenation (ECMO) use has evolved in last 30 years and has become an important part of practice during peri operative period. Previous studies have illustrated the risk factors associated with use of ECMO. However, they lack information regarding predictors of worst outcome. Here with this study on United Network of Organ Sharing (UNOS) data, we sought to identify risk factors related to graft failure among lung transplant recipients who were on ECMO support at the time of transplant. Methods: We included all adult patients who were on ECMO support at the time of transplant between 2015 & 2022. Recipients who received simultaneous liver or Kidney transplant and whose graft function were unknown were excluded (Figure 1). Recipients were stratified based on their graft status. Log rank test and Kaplan Meier curve was used to assess the graft survival for 5 years follow-up. Univariate Cox regression analysis was used to assess the predictors associated with worst outcomes. Results: After exclusion, total 1285 patients were included in the study. Of them, 450 (35.0%) suffered graft failure during follow-up. Recipients' characteristics are explained in table 1. Median survival time following transplant was 380 (78 – 896) days. In addition, Age≥60, BMI≥30, ECMO support at 72 hrs post-transplant, Ventilator support >5 days, previous transplant and post-transplant need of dialysis were independently associated with graft failure. In addition, each 1 point increase in FIO2 at or after 72 hours of transplant is associated with 1% increase in risk of graft failure in this cohort. Patients who had Cystic fibrosis and were on ECMO at the time of transplant has better graft survival post-transplant compared to all other end stage lung diseases (Figure 2). Conclusions: 35% of lung transplant recipients on ECMO support suffered graft failure. Among lung transplant recipients, advanced age (>60 years), obesity and history of previous thoracic organ transplant were independent patient characteristics associated with worse outcome. In addition, patients who required mechanical life support in the form of ECMO (more than 72 hours) or ventilator support (more than 5 days), increased FIO2 requirement at 72 hours or post-transplant need of dialysis were most likely to have worse outcome in this cohort. Cystic fibrosis patients tend to do better following lung transplant despite being on ECMO support.

Cole Evensky General Surgery (PGY-1)
Comparison of laparoscopic vs robotic cholecystectomy: a single institution's experience with economic feasibility and measures of outcome

Since FDA approval over two decades ago, the popularity of robotic-assisted or robotic cholecystectomy has grown, although uptake has not been meteoric due to need for further training for many already practicing surgeons and the cost-associated barriers some institutions face in attaining equipment. Since its introduction, robotic cholecystectomy has been often compared to its predecessor, laparoscopic cholecystectomy. It has now

been common for about 35 years in America and seen as the standard for much of that time. There is a considerable amount of comparison of laparoscopic cholecystectomy (LC) vs robotic cholecystectomy (RC), as the two most prevalent modalities for gallbladder removal. These comparisons routinely focus on measures of operative outcome and cost. In our system, we have one campus that has done predominantly LC and another that has done predominantly RC since it became available to our surgeons. This retrospective study was done to assess some outcome measures, but with the focus being on cost. With the gradual specialization of the respective campuses in terms of surgeon expertise, OR staff, and inventory, we believe the experience at our institution will provide a unique perspective on the economic feasibility of RC as well as build on the definition of other differences already existing between LC and RC in the literature. In our analysis of institutional data, we used conversions to open and number of admissions from outpatient procedures as simple measures of outcome. For cost analysis, we looked at the average direct cost per procedure. Cholecystectomies performed as the primary procedure by general surgeons for benign gallbladder disease with initial minimally invasive approach from 2019 to Q1 2022 were pulled and divided by campus. This resulted in a final n = 2696, including 1430 LC and 1266 RC. Mean values for cost were compared using an unpaired t test, and significance between proportions were detected using Chi-square analysis. Statistical methods were performed with GraphPad Prism software version 9.5.0. Statistical significance was set at $p < 0.05$. We found that the average direct cost for RC was higher compared to LC, ($5214.07 vs $4208.28, $p<0.0001$). Although low for both procedures, there was significantly higher conversion to open procedure in LC than RC (1.25% vs 0.39%, $p = 0.0149$). Finally, admission after a planned outpatient procedure was found to be 0.14% in LC, with 5.21% in RC ($p<0.0001$). In conclusion, this retrospective study showed that even with specialization of surgeons, OR teams, and campuses for one MIS modality over the other, the cost of using robot technology for this procedure is significantly higher. While conversion to open is higher in LC, unplanned admission after outpatient procedure was higher for RC, so more measures of outcome will need to be examined within institutional data. There are several limitations in this preliminary study. First, institutional data does not differentiate RC versus LC in coding. We also assume that cost reporting and accounting is uniform in operating rooms across the health system. In the future, we will access robot case logs and use them as a filter against this data to exclude the few LC that might have been included in this set. We can also gain further depth in examining severity of disease in all cases experiencing conversion and comparing other measures of outcome such as length of stay, 30-day readmission rates, and operative times for more accurate comparison to existing reports in the literature.

Saloni Savoni Internal Medicine (PGY-1)

Renal cell carcinoma incidence, outcome, risk factors and recommendation for prevention in transplant population

Background: Patients with kidney transplants have a higher incidence of developing renal cell carcinoma (RCC) compared to the general population (1). Recent data showed that Incidence of RCC was 1.6/ 10,000 during 2018 in general population with increased incidence in the patients with risk factors like Age, Male gender, African American decent, HTN, smoking (2). All the current guidelines advised against RCC surveillance in post-transplant patients. With this study we sought to identify high risk patients who might benefit from surveillance imaging. Method: The UNOS/OPTN database (as of 31st December 2022) to select recipients who received kidney transplants between 1st January 2010, and 31st December 2022. Pediatric patients, patients with simultaneous multiple organ transplants and patients with other malignancies were excluded from the study. The incidence of RCC during the first 5-year and between 5 to 10-year of follow-up period was computed. Univariate and multivariate Logistic regression analysis was performed to identify predictors for RCC. Result: Total of 202,837 patients were included and of them 1042 patients developed RCC during follow up. Mean time to diagnose RCC was 3.3 (SD: 2.7) yrs. Incidence rate during the first 5 years of follow up was 11.59 per 10,000 person years and during 5-10 years of follow up was 11.57 per 10,000 person years. Major risk factors associated with RCC were Age >34 years, BMI>29, African American race, and White people. In addition, Hypertension, RCC and Membranous nephropathy as a cause of ESRD at the time of transplant were the major risk factors for RCC during the 10 years of

follow up. Median time of graft and patient survival from the diagnosis were 466 (109 – 1243) days & 437 (109 – 1058) days, respectively. Conclusion: In conclusion, we saw that in post kidney transplant patients there is 10-fold increased risk of developing RCC in the first 5 years. Obese, middle aged, African American, or white patient with h/o hypertensive nephrosclerosis, pretransplant RCC or Membranous nephropathy are at higher risk for developing RCC during post-transplant period. RCC increases the risk of early graft failure and death. Clinical Implication: From our study results we recommend that Post kidney transplant patients with above risk factor would benefit from surveillance ultrasound. References: (1) Risk of Renal Cell Carcinoma among Kidney Transplant Recipients in the United States S. Karami,1, * E. L. Yanik,1 L. E. Moore,1 R. M. Pfeiffer,1 G. Copeland,2 L. Gonsalves,3 B.Y, Hernandez,4 C. F. Lynch,5 K. Pawlish,6 and E. A. Engels1 (2) Epidemiology of Renal Cell Carcinoma Sandeep Anand Padalaa , Adam Barsoukb, Krishna Chaitanya Thandrac , Kalyan Saginalad, Azeem Mohammeda , Anusha Vakitie , Prashanth Rawlaf, h, Alexander Barsouk, World J Oncol. 2020;11(3):79-87

Aaron Miner Arkansas College of Osteopathic Medicine (OMS III)

The Protect Trial: A Cluster Randomized Clinical Trial of Universal Decolonization with Chlorhexidine Bathing and Nasal Povidone Iodine Versus Standard-of-Care for Prevention of Infection and Hospitalization among Nursing Home Residents

BACKGROUND: Nursing home (NH) residents are at high risk of infection and hospitalization due to multidrug-resistant organisms (MDROs). Decolonization in intensive care and post-hospital discharge home settings reduces MDRO infection rates. However, decolonization effectiveness in NHs is unclear. METHODS: We performed a cluster-randomized trial of 1:1 universal decolonization vs standard-of-care bathing (control) in 28 California NHs involving a retrospective 18-month baseline period and an 18-month prospective intervention period. Decolonization consisted of 1) topical chlorhexidine antiseptic skin wash for all routine bathing and showering needs; 2) a 5-day nasal povidone iodine course on admission and then biweekly. Primary outcome was the probability that a NH transfer to a hospital was due to infection. Secondary outcome was the probability that a NH discharge was to a hospital for any reason. We also surveyed the impact on MDRO colonization by swabbing 50 randomly-selected residents per NH during the baseline and intervention periods. General linear mixed models evaluated the difference-in-differences for each outcome comparing intervention to baseline effects across groups. Analyses were as-randomized and accounted for clustering within NHs. RESULTS: Four NHs dropped from the trial (3 decolonization, 1 control), but remained in the analysis. Among control NHs, mean facility percent of hospital transfers due to infection was 62.19% during the baseline period and 62.61% during the intervention period (odds ratio (OR), 1.00, 95% CI, 0.89-1.12). Among decolonization NHs, these proportions were 62.91% and 50.79%, respectively (OR, 0.68, 95% CI, 0.61-0.76). As randomized models found decolonization was associated with a 31.90% reduction in hospital transfers due to infection vs. control NHs (P<0.001). The proportion of NH discharges due to hospitalization among control NHs was 36.61% during the baseline period and 39.20% during the intervention period (OR, 1.14, 95% CI, 1.06-1.22). In the decolonization facilities, these proportions were 35.52% and 32.37%, respectively (OR, 0.91, 95% CI, 0.85-0.97). Decolonization was associated with a 23.10% reduction in NH discharges due to hospitalization vs. control NHs (P<0.001). MDRO prevalence significantly decreased in decolonization NHs compared to control NHs between the baseline and intervention periods (difference-in-differences adjusted OR, 0.46, 95% CI, 0.33-0.66). CONCLUSION: Universal NH decolonization with chlorhexidine and nasal iodophor significantly reduced the proportion of transfers to hospitals due to infection, discharges due to hospitalization, and MDRO prevalence.

Poster Titles

S A Qualitative Assessment of Barriers and Reluctance towards COVID-19 Vaccines in African Americans
S A Rare Case of Graves' Disease in a Three-Year-Old
R A report of disseminated Mycobacterium Avium-Intracellulare in a patient with HIV
S A Unique Case of Bilateral Endogenous Endophthalmitis
S Abdominal Abscesses- Sequelae of a Perforated Gastric Ulcer Mimicking Small Bowel Obstruction
S An Atypical Presentation of Hashimoto's Encephalopathy
S * Analysis of Long COVID Content on YouTube and TikTok
S Analyzing Aquaporin 4 Immunoglobulin in Pediatric Patients Diagnosed With Neuromyelitis Optica
R Aplastic anemia within a few months of receiving a solid organ transplant
R Beefing up! Fulminant hepatic failure and renal failure secondary to anabolic steroid use
S * Bertolotti's Syndrome- Uncommon Diagnosis of Chronic Low Back Pain
R Breathing Easy- Exploring the Efficacy of Nissen Fundoplication in Reactive Airway Disease
S Cardiac Emergency- Acute Saddle Pulmonary Embolism, Intramural Hematoma, and AA with Dissection
R Comparison of Laparoscopic vs Robotic Cholecystectomy
R * Comparison of urologic complications between uretero-neocvstostomy and uretero-ureterostomy
S Confirmed Case of Spontaneous Membranous Dysmenorrhea
R * Diabetic Striatopathy- A rare case of hemiballismus as symptom of undiagnosed diabetes mellitus
R Difference of clinical significance and cost-effectiveness between multiple vs limited procalcitonin
R Establishment of a Standard Protocol for HEIT
S Extracorporeal Membrane Oxygenation-A Unique Circuit
R Incidence of Triple Negative Breast Cancer in Louisiana
R Lead Toxicity from a Retained Bullet
R * Literature Review and Case Report- A Rare Case of Chromoblastomycosis
S * Lymphatic Pump with Mesenteric Lift Augments Constipation
S * Mast Cell Degranulation and its Contribution to Chronic Pain in HIV Patients
S Mentorship Needs of Medical Students Interested in Cardiothoracic Surgery- A Need for Female
R * No Beat- A Case of Carvedilol Overdose
R Non-Invasive Testing in Diagnosing Cardiac Amyloidosis
R Novel Robotic Training for Residents
R Paclitaxel Induced Hypertriglyceridemia Complicated by Acute Pancreatitis
R Parathyroid Carcinoma- Clinical Diagnosis of a unique endocrine pathology
R Rare cardiac tumor- Cardiac myxofibrosarcoma, a case report
S Repair of Recurrent Right Hepatic Artery Pseudoaneurysm following Cholecystectomy
S Splenic Artery Aneurysm Rupture in Pregnancy at 31 Weeks
S * The Cryptic Case of the Intramedullary Cavernoma
R The Evolving Shades of Hashimoto Encephalopathy – A Review and Case Report
R Unusual Presentation of Classical Hodgkin Lymphoma in HIV
R Ventricular Fibrillation caused by R on T phenomenon

*posters chosen for Rapid Fire presentations
R Resident Poster
S Student Poster

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2nd Place - $50

3rd Place - $25

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["*A Qualitative assessment of Barriers and Reluctance towards COVID-19 Vaccines in African Americans Residing in Ouachita Parish, Louisiana*"]

Omar Haggaz, Edward Via College of Osteopathic Medicine, OMS- II

ABSTRACT

- With African Americans in Louisiana already facing the lowest life expectancy as well as the lowest median income out of any other race/ethnicity, according to a report by the Louisiana Illuminator (Canicosa, 2020).
- Specifically in the largely poverty stricken African American community. According to the CDC database only 44 percent of residents have received at least 1 dose.
- Ouachita Parish, located in northeast LA where the remnants of Jim Crow and segregation foster the foundation for a massive wealth inequity gap .
- Data Acquisition was collected via a questionnaire, with the intent to assess both vaccinated and unvaccinated individuals in the community. The surveys were written with Logic reasoning flow, an inherent feature which allowed more specific and pertinent questions for the participant based off their previous answer and autonomously categorized these very participants into vaccinated and unvaccinated groups.
- The questionnaire assesses how strongly participants agree or disagree elements such as social stigmatization, negative and positive encounters with healthcare providers, religious beliefs, and employment income or safety played a role in their vaccination status.

BACKGROUND

- Ouachita Parish, Louisiana has one of the highest Infection rates in Louisiana at 91 percent (CDC Covid Data tracker 2022).Additionally, the state of Louisiana is one of the leaders in total cases of Covid-19 per 100,000 individuals. (CDC, 2020).
- It is important to recognize that these statistics are exacerbated even more so in African American communities in Ouachita Parish, a historically medically underserved area to begin with. According to the CDC database only 44 percent of residents have received at least 1 dose (CDC Covid Data tracker 2022).
- Characteristics of health services delivery include a near 47 percent of the population on public health insurance which includes Medicare and Medicaid and close to 14 percent of the population in Ouachita parish without insurance at all (United States Census Bureau, Monroe Louisiana Healthcare Data 2022).

OBJECTIVES

- **Objective I** : The projected outcome of this project is to gain a more thorough understanding of the disproportionately low vaccination rates among African Americans residing in our community site. Through survey data assessing a myriad of factors regarding vaccinated or unvaccinated status, a more descriptive and empirical assessment of the truly impactful societal and personal components that go into either choice is hoped to be garnered.
- **Objective II** : To serve as a foundation for a larger study of the same nature. With the hopes that with the addition of more resources a broader and increasingly more detailed research project can be conducted throughout the many underserved communities specifically in the south, where the remnants of systematic racism still are overtly apparent and the stark wealth inequities stemming from them still perpetuate massive access to healthcare disparities

METHODS

- Data Acquisition was collected via a questionnaire, with the intent to assess both vaccinated and unvaccinated individuals in the community. The surveys were written with Logic reasoning flow, an inherent feature which allowed more specific and pertinent questions for the participant based off their previous answer.
- Regarding the methodology of how data was collected from participants, 2 approaches were utilized. Flyers with a generated QR code, that could be scanned with a mobile camera and subsequently sent to the survey form, were dispersed among communal areas such as barber shops, grocery stores, churches, recreational centers, beauty salons. The other method entailed manually getting participants to fill out the survey in the same communal places via tablets.

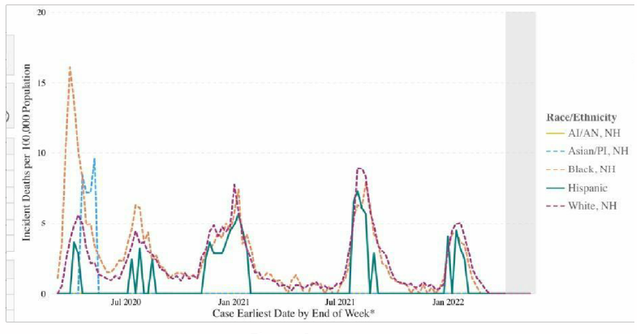


***Figure* A**

- One of the most shocking statistics reveal when looking at Covid-19 weekly deaths per 100,000 peoples and stratifying those deaths by race/ethnicity, there exists a period during the beginning of the pandemic, where African Americans died at a massively disproportionate rate.
- From March 1st to June 2020, close to 16 African Americans died per 100,000 people, as compared to the 4 deaths per 100,000 people seen in those who classified as White (Figure A).

RESULTS

- Among the factors influencing their decision to remain unvaccinated, community religious beliefs were cited as having the greatest impact more than any other encompassing 35.3% of individuals (Figure 1).
- Another significant finding was that 37.5% of survey participants who chose to become vaccinated strongly agreed on socioeconomic factors such as employment, income, and safety influencing their decision (Figure 2).

RESULTS

Figure 1

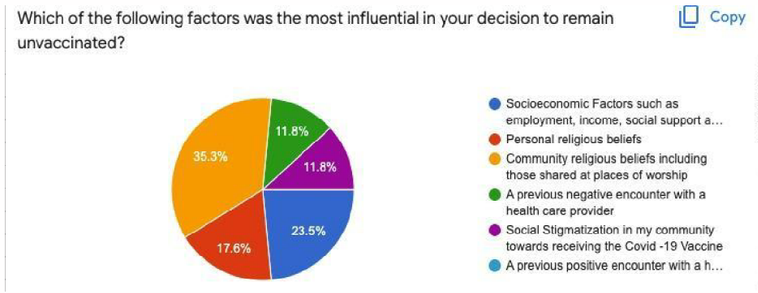
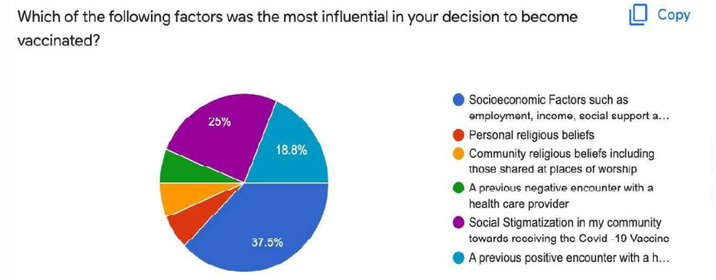


Figure 2



CONCLUSIONS

- The goal of this study was to accurately gauge if the previously established widespread inequities in the area, which range from housing to lack of access to healthcare; influenced the crucial decision of vaccination status
- .For example, this is indirectly exhibited by the fact that most individuals strongly disagreed with the notion that positive encounters from their doctor played a significant role to become vaccinated. I believe this speaks volumes and is an attestation to the level of patient provider satisfaction in the area. The consensus for most people is that healthy lifestyle changes or cessation of harmful habits in patients

A Rare Case of Graves' Disease in a Three-Year-Old

Archa Rajesh (OMS-III),[1] Ary Ravari,[2] Heather Roan,[3] MPAS,PA-C, and Laura Kimball-Ravari,[4] MD, FACE

Willis-Knighton Health System[1] and Edward via College of Osteopathic Medicine[1]

Abstract

Graves' Disease (GD) is an autoimmune disease that causes hyperfunctioning of the thyroid gland and may be triggered by environmental factors such as infection or stress. Though the leading cause of hyperthyroidism in both adult and pediatric populations is GD, it is extremely rare in children under the age of four years old. GD affects about 0.1 per 100,000 children per year with some studies showing the incidence of hyperthyroidism in children under the age of four without female predominance to be 1 per 1,000,000. Detecting GD early is very important. The longer GD is undetected or not treated, the higher the risk of failure to thrive. There have also been cases of young children suffering from psychomotor delays, craniosynostosis, and language delays because their suspected diagnosis of GD had not been detected for one to two years. In this article, we report the case of a previously healthy three-year-old Caucasian female who presented to the pediatric endocrinologist after collapsing from an episode of hypoglycemia. The patient was diagnosed with Graves' Disease due to her significantly elevated free T3 and T4, decreased TSH, positive thyroid peroxidase (TPO) antibodies, and elevated TSIg. She was started on methimazole. This case report will demonstrate the importance of recognizing the signs and symptoms of GD early, as well as discuss the importance of increasing the recognition of autoimmune diseases in the pediatric population.

Introduction

Autoimmune thyroid disease, whether it be GD or Hashimoto's thyroiditis (HT), is the most acquired thyroid illness worldwide. GD is the most common cause of hyperthyroidism in any population, yet under the age of four it is extremely rare. GD is associated with thyroid-stimulating hormone receptor antibodies that stimulate the production of thyroid hormone. It is a T-cell mediated inflammatory dysfunction of the thyroid gland. Genetics, environmental triggers, or even other autoimmune diseases can be linked to why a child might develop GD. Thyroid hormones are important in the development of the central nervous system and growth in young children. If not diagnosed early, hyperthyroidism can affect growth and development leading to issues such as craniosynostosis, failure to thrive, behavior disturbances, and speech impairment. Therefore, it is essential to not only recognize the symptoms of GD, but also to begin prompt treatment.

Case Presentation

A three-year-old Caucasian female who presents to the office for the first time with concerns of low and high blood sugars over past 10 days. Patient's mother reports that the patient was initially noted to be lethargic when she woke up in the morning and when she tried to pick her up, she collapsed on the ground. There was no history of loss of consciousness. When the mother noticed these symptoms, she checked her blood glucose, and the patient was noted to have hypoglycemia with blood glucose 53 mg/dL and the repeat was 47 mg/dL. She was then treated with apple juice and then the repeat glucose level was noted to be >200.

She had a similar episode of hypoglycemia 4 days later with blood glucose <50 mg/dL and the repeat blood glucose after treatment with juice increased to >200 mg/dL.

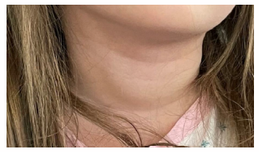
She was noted to have brief episodes of postprandial hyperglycemia with blood sugars close to 200s following breakfast in the morning consistently almost every day.

In addition to these instances of fluctuating glucose levels, the patient presented to the ED 5 months prior with acute episodes of hyperemesis, dehydration, and hypoglycemia with a blood glucose 45 mg/dL initially and later developed hyperglycemia with blood glucose 269 mg/dL after treatment with juice and IV fluids at that time. The next day she developed a maculopapular and vesicular rash consistent with Hand-Foot-Mouth disease.

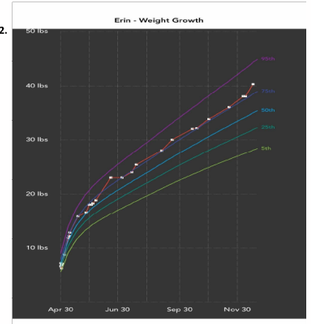
The patient was a taller than average child with receding eyebrows, palpable goiter, tachycardia, along with various at-home hyperglycemic episodes and hyperactive bowel movements.

Images

1.



2.



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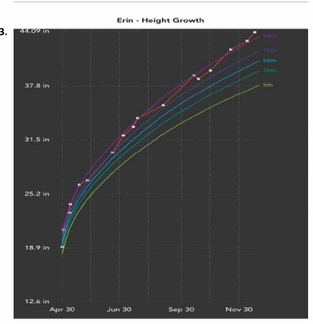

Figure 1. Enlarged thyroid with smooth surface and each lobe measuring 2cm X 2 cm
Figure 2. Growth chart reveals her height tracking above the 97th percentile curve.
Figure 3. Weight along the 75th percentile curve with her BMI around 25th percentile curve.

Labs

TSH Receptor Ab: 45 (<1.5)
TSH: <0.015 (0.7-6.0)
FT3: >22.80 (3.31-4.88)
FT4: >7.0 (0.9-1.8)
TSI: 2.6 (<1.3)

TPO-Ab: 41.0 (<9.0)
AST: 57 (8-50)
ALT: 77 (0-35)
ALP: 382 (100-320)
BHB: 0.8 (<0.4)

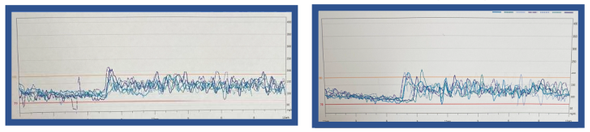

Figure 1 & 2. These images show the fluctuating blood glucose levels ranging from below 70 to greater than 200 mg/dL.

Discussion

Graves' disease (GD) is the most common cause of hyperthyroidism worldwide. However, the demographic is commonly females between the ages 20 and 30, not in children under four. Lacking identification of undiagnosed GD in children will result in various complications.

Undiagnosed, excess thyroid hormone (FT3,FT4) will cause the body's metabolism to become overly active. This can result in weight loss, nervousness, fast heartbeat, tiredness, and various other issues. This is because excess thyroid hormone can affect the heart, skeletal muscle, eyes, skin, bones, and liver. This is why complication of GD in the pediatric population include failure to thrive, thyroid storm, psychomotor delays, craniosynostosis, and language delays. Another finding, which is consistent with our patient, was how thyroid hormone can lead to abnormal glycemic values.

Autoimmune thyroid disease has no known proven cause; however, it could be said that it is multifactorial. Along with genetics, studies have shown how an environmental trigger, such as a viral or bacterial infection, could instigate the disease when the body produces self-antigens in response to the insult. Studies have also shown that children who are already predisposed to other autoimmune and chromosomal diseases have an increased risk of autoimmune thyroid disease.

For children under the age of five, there are a couple options regarding treatment. Treatment options would include antithyroid medications (ATD), thyroidectomy, or radioactive iodine (RAI). Typically, the first-line therapy for pediatric GD is methimazole. With each treatment, there are various adverse effects. As GD is a chronic condition, lifelong treatment is needed, and earlier diagnoses may result in inclined well-being for the patient, who may be relieved of symptoms. As it may take time to determine the correct dosages of medication or finding a specific treatment, ample time may prove to be necessary.

Conclusion

There are currently very few cases of young children with a known diagnosis of GD. Pediatricians should become more conscious of the symptoms in young patients. As GD affects many aspects of health, it is important to seek medical treatment and early diagnosis. A solution could be monitoring for autoimmune indications in prenatal stages, as thyroid-stimulating immunoglobulin (TSI) is able to pass freely through the placenta. Our case was an example of a patient who had luckily been caught early in her disease progression.

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A report of disseminated Mycobacterium Avium-Intracellulare in a patient with HIV presenting with Massive Splenomegaly

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Background

- Mycobacterium avium-intracellular complex (MAC) is a bacterial infection that can occur in patients with HIV with CD4 T lymphocyte cell counts of <50/mm^3.
- Patients with HIV and advanced immunosuppression with ineffective antiretroviral therapy (ART) or chemoprophylaxis have a reported incidence of disseminated
- MAC ranging from 20% to 40%. However, the incidence of MAC in patients with HIV is steadily decreasing due to the advances in ART.

Case Presentation

- A 37-year-old Caucasian female with known HIV-1 presented to the ER with 1 week history of shortness of breath, bilateral lower extremity edema, abdominal fullness, nausea, and vomiting accompanied by a 30-pound weight loss. She reports non-compliance with her prescribed HIV medication, Biktarvy.
- Constitutional exam was pertinent for an afebrile, pale, and cachectic woman with a BMI of 16. Physical exam revealed distended abdomen and palpable hepatosplenomegaly.
- Lab studies remarkable for pancytopenia including a hemoglobin of 5.2 gm/dl, white blood cell count of 2.6k/mm3, albumin of 2.3gm/dl, and CD4 T lymphocyte count of 10mm3.
- The patient was placed on Pneumocystis prophylaxis with atovaquone
- Open splenectomy was performed for both diagnostic and therapeutic intent.
- Pathology notable spleen weight of 2201 grams. Histology staining revealed Ziehl-Neelson macrophages engorged with acid fast bacilli.
- Disseminated MAC was presumed, and patient was started on azithromycin, rifabutin, ethambutol.
- Blood cultures were positive for Mycobacterium Avium Complex approximately three weeks after initial draw. .

Image Findings

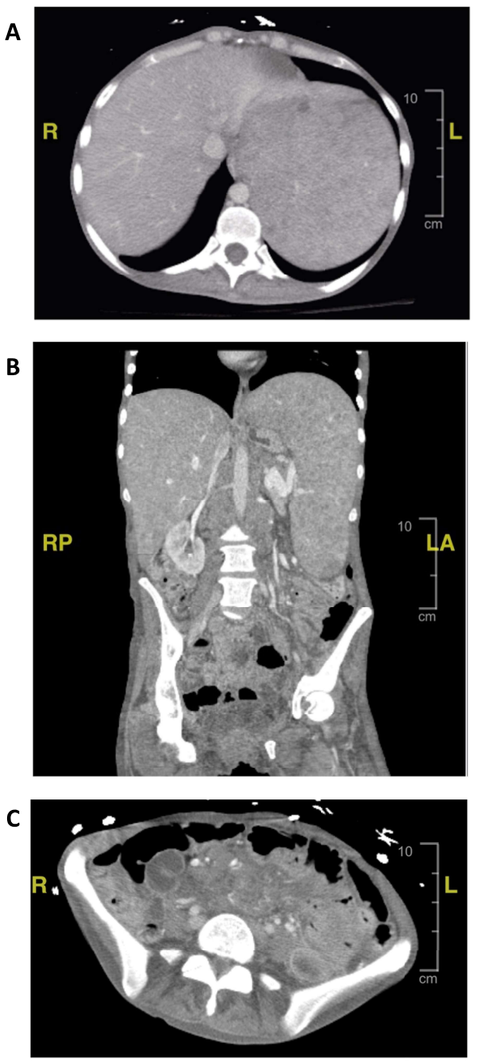

Figure 1. A. Computed Tomography of Abdomen with intravenous contrast in axial view demonstrating hepatosplenomegaly with spleen measuring approximately 23x15x9cm at biggest dimension. **B.** Computed Tomography of Abdomen with intravenous contrast in coronal view demonstrating hepatosplenomegaly. **C.** Computed Tomography of Pelvis with intravenous contrast in axial view demonstrating mesenteric and retroperitoneal lymphadenopathy

Pathologic Findings

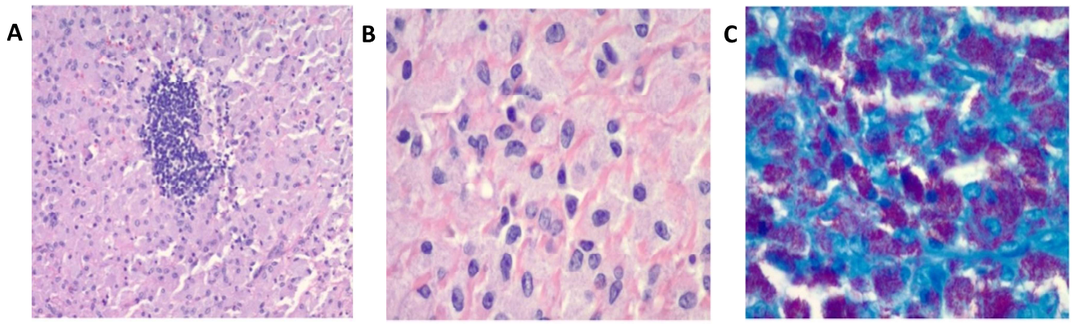

Figure 2. A. 10x of the routine Hematoxylin and eosin stain (H&E) **B.** 45X of the H&E stain in same field as figure 2A **C.** 45X of the Ziehl-Neelsen (AFB) stain

Conclusions

- Disseminated MAC is becoming increasingly rare due to advances in ART.
- In a patient with HIV, CD4 count <50mm^3, massive splenomegaly and bulky intra-abdominal lymphadenopathy, a diagnosis of disseminated MAC should be considered.
- A positive culture is required for treatment of MAC. Diagnosis can be challenging due to length of time to grow a culture.
- Prognosis is poor in these patients, and treatment should not be delayed due to length of time required for positive culture.
- Therefore, diagnostic and therapeutic splenectomy should be considered in the setting of massive splenomegaly to obtain a tissue diagnosis to begin treatment if CT guided aspiration of lymphadenopathy is not feasible.
- If the patient is resistant or non-compliant to HIV treatment, the course of diagnosis and treatment of this infection other pathogenic infections and potential lymphomas need to be considered.

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A Unique Case of Bilateral Endogenous Endophthalmitis

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Introduction

Bilateral endogenous endophthalmitis (EE) is a rare event associated with significant morbidity. Our patient with EE received a delayed diagnosis, resulting in poor visual function bilaterally. This case highlights the importance of identifying EE early in the disease process to recognize disseminated infection, prevent vision loss, and minimize morbidity and mortality.

Case Report

Background: The patient is a 59 y.o. male with a history of type 2 diabetes, hyperlipidemia, and hypertension that presented to the ED with complaints of progressively worsening generalized weakness, neck pain, and difficulty swallowing over the last week.

Objective Findings: Labs were consistent with diabetic ketoacidosis and acute kidney injury. Neck imaging revealed a prevertebral abscess (figure 1A) and blood cultures x2 were positive for methicillin-sensitive *Staphylococcus aureus*. He was initiated on intravenous nafcillin. On their initial evaluation neurosurgery recommended continued conservative intravenous treatment as the patient had no cord compression and no associated weakness or sensation loss. He was stable until day 4 of admission when the patient noted worsening neck pain, upper extremity weakness, and new decreased vision in both eyes. A repeat MRI of the cervical spine was performed showing worsening of his prevertebral abscess from 3.6cm to 5.4cm (figure 1B). ENT was consulted. A few hours later, the patient became obtunded and developed septic shock. He was transferred to the ICU for an emergent central line placement and initiated on phenylephrine and sodium bicarbonate drips. Once stable, ENT performed abscess drainage with the placement of a JP drain intraoperatively. He tolerated surgery well but continued to endorse worsening vision bilaterally. Ophthalmology was consulted.

Ophthalmic Findings:
Visual Acuity was CFx3' OD and 20/100 OS. There were no afferent pupillary defects. The confrontation visual field showed diffuse depression OU. Intraocular pressure was within normal limits bilaterally. The anterior segment was unremarkable. The funduscopic evaluation revealed vitritis resulting in poor view bilaterally (figure 2). Snowbanking was evident with an inferior view bilaterally and the retinas appeared flat. There were no definitive signs of chorioretinitis. A vitreous sample was taken for culture and vancomycin and ceftazidime were injected into the vitreous cavity. During his admission evaluations, his vitritis cleared. However, his vision remained unchanged at CF and 20/100 OD and OS, respectively. He was lost to follow-up after his hospital admission.

Images

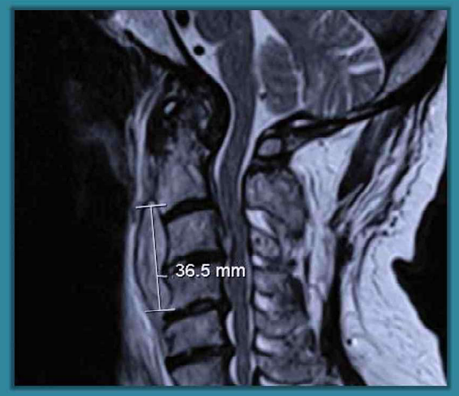

Figure 1A: Day two hospital stay, sagittal CT cervical spine showing a 3.6cm prevertebral abscess

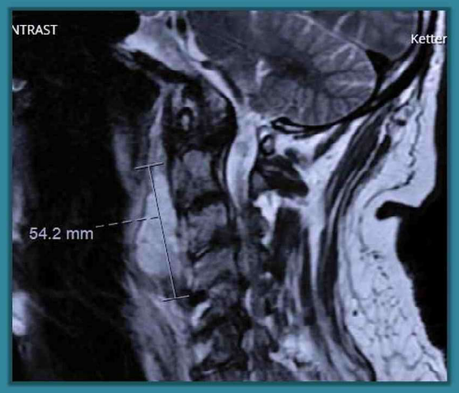

Figure 1B: Day 4 hospital stay, sagittal CT cervical spine showing prevertebral abscess now measuring 5.4cm x 2.3cm

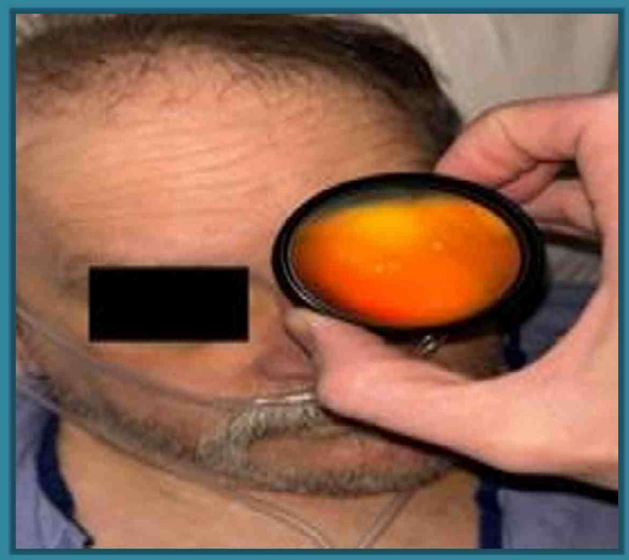

Figure 2: Bedside 20D BIO evaluation revealing vitritis of left eye

Discussion

92-98% of cases of endophthalmitis are exogenous, resulting primarily after eye surgery, intravitreal injections, or penetrating trauma. Only 2-8% of cases are from an endogenous source, 50% of which are from infective endocarditis and 19% are of bilateral presentation. Exceedingly rarely, as in our present case, do prevertebral abscesses lead to endophthalmitis.

Microbiological factors related to EE have been well-linked in the literature regarding visual outcomes. Bhoomibunchoo et al found that visual acuity of 20/100 or better was most seen with gram-positive, coagulase-negative micrococci (84%), followed by *S. Aureus* (50%). However, research predicting visual outcomes based on the duration between symptom onset and diagnosis of EE could not be found. This is a true concern as Budoff et al found that 26% were delayed in diagnosis.

Conclusion

Early diagnosis in our patient was missed and likely contributed to his poor visual outcome. The delay in diagnosis may be attributed to the patient becoming unresponsive and being transferred to the ICU shortly after reporting visual issues. Additionally, while the connection between vision loss and infective endocarditis is well-established in the literature, this is not the case for pre-vertebral abscesses. As a result, primary in-patient teams must foster high alert for changes in visual acuity to aid in the diagnosis of EE in all cases of bacteremia, not solely from cardiac valve origin.

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Abdominal Abscesses: Sequelae of a Perforated Gastric Ulcer Mimicking Small Bowel Obstruction

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Introduction

Peptic ulcer disease is estimated to affect 4 million people in the world and have a lifetime prevalence of 5 to 10% of the population.[1] Peptic ulcer disease is a discontinuation of the gastric or intestinal wall lining, that is typically caused by acid secretion.[2] The extent of the disease depends on the type of irritant or exposure, some commonly named are non-steroidal anti-inflammatory drugs, alcohol, Helicobacter pylori, caustic ingestion, smoking, Zollinger Ellison syndrome and genetics. Some, if not treated appropriately can evade through five layers of the gastric wall leading to perforation. Peptic ulcer with perforation has a mortality rate between 1.3% and 20%, with a 30-day mortality rate of 20% and a 90-day mortality of 30%.[3] Patients with a perforated ulcer will typically present with sudden onset severe epigastric pain, rigidity due to peritonitis, tachycardia and sometimes hypotension. The pathology previously described relates to acute large perforations, but some cases of perforation can be a chronic progressive disease that may be contained locally by inflammatory reactions and become walled off to create an abscess.[4] Gastric wall abscesses are rare complications of peptic ulcers and can be difficult to detect due to non-specific radiologic findings, often leading to high mortality rates.[5]

Imaging:

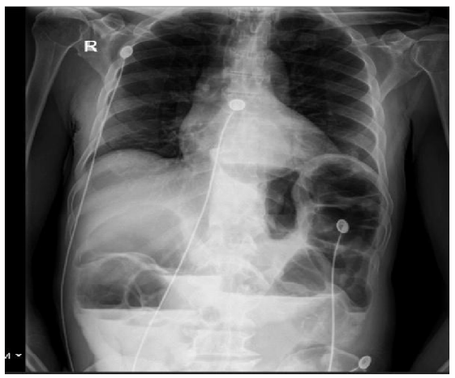

Figure 1. Initial AP abdominal X-ray indicating distended loops of bowel, with air fluid levels.

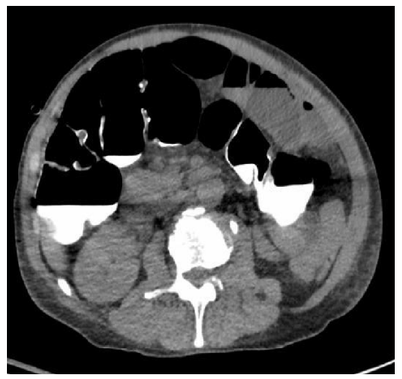

Figure 2. Axial CT image of abdomen representing air fluid levels.

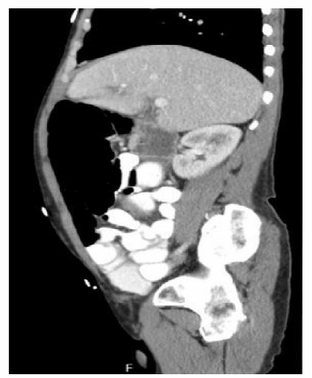

Figure 3. Sagittal CT image representing air filled loops of bowel.

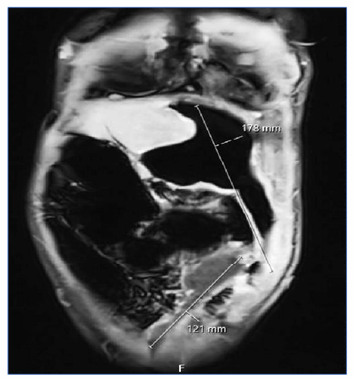

Figure 4. Abdominal MRI revealing gastric abscesses extending from the left upper hemiabdomen to the deep pelvis. Measuring:
(17.8 x 10 x 5 cm and 12.1 x 5.9 x 2.6 cm)

Patient Presentation

- **HPI:**
  - 69 yr. old African American Male presented to the ED with history of 1-month abdominal pain.
  - Patient had an unintentional 30-pound weight loss with fever and chills.
  - Pain is described as sharp and diffuse with no aggravating or relieving factors.
- **Subjective:**
  - **Past Medical History**: Previous Cholecystectomy
  - **ROS**: 30-pound weight loss, night sweats, fevers, and chills
  - **GI**: Abdominal pain for 1 month, + nausea with vomiting
- **Objective:**
  - Temp: 99.1 F, HR: 110, BP: 110/72, O_2 Sat : 99 %
  - **Physical exam:**
    - Abdominal distension with active bowel sounds in all quadrants.
    - Diffuse abdominal tenderness, no rebound tenderness, or guarding.
  - **Labs:**
    - WBC - 19, Hgb-12.6, Hct- 37.8, Plt count- 689, Glucose 131
    - AST- 112, ALT- 121, ALP- 142, Na^+ 133 L, BUN- 29

Continued Care

- Patient presumed to have a small bowel obstruction and a nasogastric tube was placed for bowel decompression.
- Day - 2 Patient had no symptomatic improvement, and little, to no output from NG tube suction.
- The patient underwent abdominal MRI for liver lesions seen on CT imaging the previous day.
- MRI incidentally found large gastric abscesses abutting the greater curvature of the gastric wall.

Treatment

- The patient was brought to interventional radiology for CT guided drainage of the abscesses which was noted to be composed of mostly air and was then taken to the operating room.
- The patient underwent robotic exploratory surgery which then confirmed gastric abscesses, which were further removed.
- A Graham Patch repair was performed on the gastric wall perforation which was noted to be 1 x 1 cm.
- The patient did well post operatively with no following complications

Conclusion

- Gastric abscesses should be considered as a differential diagnosis when assessing imaging for bowel obstructions.
- Quite rare in literature, the gastric abscesses in this case had similar imaging presentations to gastrointestinal obstructions, which ultimately led to a delay in diagnosis and treatment for this patient.

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An Atypical Presentation of Hashimoto's Encephalopathy

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Abstract

Hashimoto's Encephalopathy (HE) is loosely characterized by the presence of elevated anti-thyroid antibodies, neuropsychiatric symptoms, and response to steroids. The pathophysiology, although not well understood, is widely thought to be autoimmune in nature. Clinical presentation can vary but systemic symptoms are rare. The presence of autoantibodies in blood, elevated protein and lymphocytic pleocytosis in cerebral spinal fluid (CSF), and non-specific electroencephalogram (EEG) changes are common among patients, but it is a diagnosis of exclusion in current practice. The mainstay of treatment involves glucocorticoids and thyroid hormone replacement with a mostly favorable prognosis.

We present the case of a 40-year-old Caucasian male with multinodular goiter and Hashimoto's thyroiditis who was evaluated for depression, paranoia, and altered mentation following episodes of spontaneous, severe urticaria.

Following fine needle aspiration (FNA) biopsy and molecular marker evaluation, the thyroid nodules were reported benign. Anti-thyroglobulin (Tg-Ab) antibody titer was extremely elevated at >4000 IU/mL while anti-thyroid peroxidase antibodies (TPO-Ab) were only mildly elevated at 76 IU/mL. Although the majority of HE patients demonstrate elevated TPO-Ab, there is minimal literature noting a markedly elevated Tg-Ab as seen in this patient.[1] This case serves as an addition to the literature in terms of clinical presentation and laboratory findings to aid the accurate diagnosis of this syndrome.

Background

HE is a rare, underdiagnosed, and poorly understood disease seen in patients with a history of Hashimoto's thyroiditis.[2] It has been described in all age groups, most often women in the 4th-5th decade of life. Its prevalence has been estimated at 2.1/100,000 in the adult population with a female-to-male ratio of 4:1.

The signs and symptoms of HE are highly variable, making its diagnosis challenging. Some patients develop recurrent focal neurological deficits exhibiting stroke-like behavior, while others demonstrate a decline in cognition that could eventually progress to dementia, psychosis, and coma.[4] The proposed pathophysiology includes autoimmune vasculitis due to immune complex deposition or toxic interactions between thyroid-stimulating hormone and the CNS, but this is still controversial. The autoantibodies, despite being an essential feature, have not been found to consistently correlate with symptoms or their response to corticosteroid treatment.[5]

Workup for HE generally includes a lumbar puncture to exclude infection and the most common abnormality found is an elevated protein concentration.[6] EEG shows nonspecific abnormalities and positive neuroimaging is less common. Labs and magnetic resonance imaging (MRI) better serve to exclude other diagnoses.

The goal of treatment is not only to reduce antibody stimulation, but also to resolve any concurrent dysthyroidism. First line therapy begins with an initial high dose of methylprednisolone for 3-7 days, followed by prednisone for 6-8 weeks or initial doses of only prednisone daily, both with gradual taper. However, neither therapy has improved results over the other.[6]

Case Presentation

- **History:** 40-year-old Caucasian male was referred to the endocrinology clinic for evaluation of multinodular goiter and Hashimoto's thyroiditis. The patient's primary concern was an outbreak of persistent urticaria on his legs, arms, & buttocks for the past 3 weeks.
- Past medical history was positive for thyroid disease, which was being managed with Synthroid. Family medical history was positive for maternal thyroid disorder with unremarkable surgical and social history. No food or drug allergies.
- Patient was initially evaluated for thyroid disease when several incidental nodules were found the previous year. Upon ultrasound and FNA, the nodules were deemed benign. Thyroid function studies at that time revealed a mildly elevated TSH of 5.72 and FT4 of 0.7; he was started on Synthroid 25mcg daily with compliance and euthyroid labs.
- **Review of systems:** Positive for hives and pruritis
- **Physical exam:** Fullness in the thyroid bed – approximately 2x the normal size. There was firm enlargement of both lobes, nontender, and movement with swallowing.
- **Assessment:** Autoimmune thyroiditis, nontoxic multinodular goiter
- **Plan:** Patient's Synthroid dosage was increased to 37.5mcg daily to suppress antibody stimulation. Thyroid panel ordered at presentation is listed in Table 1.

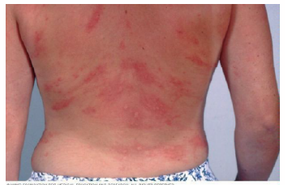

Figure 1. Example of urticarial rash experienced by this patient

(https://www.mayoclinic.org/diseases-conditions/chronic-hives/symptoms-causes/syc-20352719)

- **Clinical course:** Months later, the patient's urticaria improved but with continued breakouts leading to a final increase in dosage to 75mcg daily. Shortly after dose, the patient's wife reported patient's concerns of increased anxiety and insomnia. The patient's mental health rapidly declined over the next couple of months which resulted in an admission to a behavioral health center. Patient was prescribed antidepressants but developed extreme paranoia and AMS upon discharge. Patient was admitted and monitored in a partial inpatient program for major depression and delusional thinking.
- Neurology consulted. Brain MRI was unremarkable. Lumbar puncture results were unremarkable with an exception of a mildly elevated CSF protein cell count of 66mg/dL and oligoclonal bands borderline at 2 counts.
- Patient continued to have urticarial outbreaks (figure 1) with intermittent response to steroids. Patient was empirically treated for Hashimoto's encephalopathy with a prednisone taper with reported improvement in one week. Patient was able to discontinue psych medications and returned to baseline mental status. Repeat thyroid function studies were obtained at the next endocrinology visit as listed in Table 2.

Table 1. Initial Labs upon Presentation

TSH	3.130 uIU/mL
FT4	1.8 ng/dL
Tg-Ab	>4000 IU/mL (H)
TPO-Ab	76 IU/mL (H)

Table 2. One year Post Treatment

TSH	1.830 uIU/mL
FT4	1.0 ng/dL
FT3	2.93 pg/mL
Tg-Ab	>2000 IU/mL (H)
TPO-Ab	29.5 IU/mL (H)

Lab Test	Reference Range
Thyroid Stimulating Hormone (TSH)	0.370-4.550 uIU/mL
Free Thyroxine (FT4)	0.78-2.19 ng/dL
Free Triiodothyronine (FT3)	2.77-5.27 pg/mL
Thyroglobulin Antibody (Tg-Ab)	<4.0 IU/mL
Thyroid Peroxidase Antibody (TPO-Ab)	<9.0 IU/mL

Discussion

- Because the presentation of HE varies, investigating the pathophysiology, elucidating the clinical syndrome, early diagnosis, and prompt treatment can be valuable in identifying the etiology of the condition (i.e., mental illness due to neurotransmitter imbalance or autoimmune attack).
- Diagnostic criteria includes elevated anti-thyroid antibodies, neuropsychiatric symptoms, and response to steroids. Current literature states that most HE patients present with acute psychosis, followed by depressive disorder, bipolar disorder, and dementia.
- Our patient's demographics show he is in the minority of HE case presentations with his urticaria serving as a warning sign of extreme antibody stimulation.
- Studies have shown a positive association between autoimmune disease and episodic urticaria, with evidence of antithyroid antibodies in up to 57%.[9-10] However, the frequency of urticarial outbreaks and rapid deterioration in mental status was unpredictable.
- The patient's antibody titer of >4000 IU/mL is much higher than previously reported and could suggest the reason for progression into encephalopathy. If the patient were to delay treatment for his urticaria, his neuropsychiatric issues could have worsened and become irreversible. Although HE generally has a favorable prognosis following treatment, residual cognitive deficiency has been reported in patients.[11]
- The effects of thyroid hormone replacement for clinical symptoms of urticaria are still variable. In this patient, adequate suppression therapy alleviated the urticaria and halved his antibody titer. This, with the addition of corticosteroids, was successful in treating his encephalopathy.
- For refractory cases, immunosuppression drugs (methotrexate, azathioprine, cyclophosphamide, and mycophenolate mofetil) or therapeutic plasma exchange should be considered. These methods are thought to be successful in the removal of anti-TPO antibodies from the blood or decreasing the number present, alleviating the patient's symptoms.[7-8]

Conclusions

- Acute psychiatric presentations in the setting of patients with a history of autoimmune thyroid disease may be suggestive of Hashimoto encephalopathy.
- Further work up must be done to isolate autoimmune or idiopathic causes of psychiatric disorders, especially in patients with no previous known history.
- In patients with positive antithyroid antibodies, though asymptomatic, we suggest close monitoring of titers and routine follow up.
- Although anti-TPO antibodies are more commonly elevated in those with Hashimoto's Encephalopathy, it is important to consider disease risk in those patients with severely elevated anti-thyroglobulin antibodies.
- In patients with autoimmune skin manifestations, a full workup should be done to rule out other diseases, infection, or malignancies.
- Prompt treatment to promote euthryoidism along with corticosteroids are necessary to prevent irreversible cognitive deficits.

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Analysis of Long COVID Content on YouTube and TikTok: A Cross-Sectional Study

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ABSTRACT

Context: Post-acute COVID syndrome, colloquially referred to as Long COVID, is a complex and prevalent syndrome that have impacted millions of individuals worldwide who have recovered from acute COVID infection but are left with the sequela of unexplained symptoms, oftentimes with no end in sight. As this disease is novel and new information is being discovered rapidly, patients may utilize social media to learn about Long COVID and to seek directions in navigating through the illness. However, social media content is not always peer-reviewed or verified by an expert in healthcare.

Objective: This study aims to evaluate the characteristics of Long COVID information posted on YouTube and TikTok and to compare the quality and reliability of the content between the two platforms by analyzing them using the modified DISCERN (mDISCERN) scale and the Global Scoring criteria (GQS).

Methods: The hashtag "#LongCovid" was used to perform a search of the top 100 most viewed videos on each platform. Characteristics of each video were collected, including creator type, video duration, video age, and the number of views. Two independent trained raters assessed the quality and reliability of each video by rating it using the mDISCERN scale. In addition, the GQS criteria validated the subjective measures of each video which rates the quality level of the health information.

Results: The data suggest that content related to Long COVID on YouTube is more accurate and reliable than that on TikTok. Additionally, videos made by healthcare institutions, professionals, and broadcast news stations have higher quality and reliability compared to those created by the general public. Using the mDISCERN scale, it was found that TikTok videos were rated low quality while YouTube videos were rated high quality. When accounting for the views per social media platform, there were more views and Likes amassed per TikTok video compared to YouTube.

Conclusions: Online videos on Long COVID have a wide range of quality across the social media platforms YouTube and TikTok. Greater care should be taken by the general public when following the advice posted on a video on social media. Healthcare professionals should create high-quality videos to disseminate valuable information. Future studies should be directed towards improving the quality and accuracy of health information on social media platforms, focusing our efforts on ensuring that followers on these platforms are not deceived.

BACKGROUND

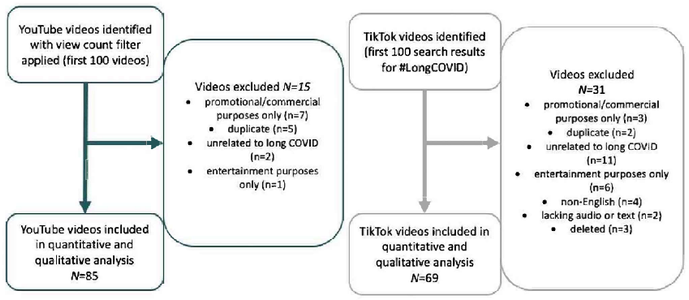
- SARS-COV-2 has woven into the lives of countless individuals around the world since its inception in late 2019 with its initially deadly acute respiratory course that has now transformed into a relatively milder progression of symptoms. Unfortunately, due to the less severe manifestation of COVID-19 in the current day, government officials and global citizens alike have ceased their vigilance and preventative measures that were stressed in prior years.
- This loosening of protective behavioral patterns has had a predictable consequence of exponentially spreading the virus to individuals who may not suffer from the same lethal strains but may be left with inexplicable sequelae that will change their lives forever. These symptoms can vary widely, and this post-COVID syndrome is known as Long COVID.
- Patients who are suffering from Long COVID are understandably concerned about their own symptomatic course, prognosis, diagnostic modalities, and treatment options available when it comes to this novel disease. Furthermore, many medical professionals may not be as familiar with the progression of the disease, especially since there is no agreed upon standardized treatments centered around Long COVID.
- As a result, many patients and even healthcare providers have turned to the most accessible form of quick knowledge in today's world – social media – which may be a double-edged sword depending on the source of the health information content and even the type of social media platform utilized.

OBJECTIVES

- The purpose of this study was to investigate the quality of the most searched content that is accessible to YouTube and TikTok users revolving around Long COVID during one set in time (late 2022) for the most recent health-related coverage across the social media platforms.
- Compare the accuracy and reliability of Long COVID content using specific data points in each video to determine whether there is a difference in quality in YouTube versus TikTok videos available to the general public.

METHODS

- Both the TikTok mobile phone application and the YouTube platform were queried with a search for the hashtag "#LongCOVID." Only videos/information in English made in the last 6 months on TikTok or made in the last 12 months on YouTube were evaluated because we were limited in those parameters by the search engines. 100 videos from each respective platform were selected to be evaluated with specific inclusion criteria.
- Videos were viewed and a content assessment was performed using mDISCERN on whether or not the following information was present regarding Long COVID: P**revalence/Incidence**, C**linical Symptoms**, D**iagnostic Testing**, T**reatment**, T**utcomes/Prognosis**, P**ediatric (<18 years of age)** or A**dult Long COVID**.
- Higher mDISCERN scores indicate higher accuracy, reliability, and quality of information delivery. Each affirmed item receives a score of 1, and the total sum score ranges from 0 to 5. A high-quality mDISCERN score is 3 or greater.
- In addition, all videos were assessed using the **Global Quality Scoring Criteria**, which is a validated subjective measure of the overall quality of health information, rated on a 5-point Likert scale, with a score of **1** indicating **poor quality**, a score of **3** indicating **moderate quality**, and a score of **5** indicating **excellent quality**.



	Global Quality Score	
	Score	Global Quality Score Description
Low quality	1	Poor quality, poor flow of the site, most information missing, not at all useful for patients
	2	Generally poor quality and poor flow, some information listed but many important topics missing, of very limited use to patients
Moderate quality	3	Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients
High quality	4	Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients
	5	Excellent quality and excellent flow, very useful for patients

mDISCERN Scale	
Characteristic	Points
Are the aims clear and achieved?	0 = No; 1= Yes
Are reliable sources of information used?	0 = No; 1= Yes
Is the information presented balanced and unbiased?	0 = No; 1= Yes
Are additional sources of information listed for patient reference?	0 = No; 1= Yes
Are areas of uncertainty mentioned?	0 = No; 1= Yes

mDISCERN Scale	
Sum	Description
<3	Low quality
≥3	High quality

RESULTS

- **YouTube versus TikTok Breakdown**
  - YouTube videos had significantly greater odds to report prevalence/incidence of COVID (9.3x), COVID treatment information (2.6x), and outcomes (3.0x) compared to TikTok.
  - YouTube videos had significantly greater odds (based on reviewer ratings) of demonstrating clear aims (10.6x), having reliable sources (16.8x), judged unbiased (9.1x), providing additional sources (2.9x), and acknowledging uncertainty (10.1x) compared to TikTok.
  - YouTube videos were significantly longer, but TikTok videos were viewed significantly more times and received significantly more "Likes" overall. A significantly greater portion of TikTok videos was created by the General Public versus Broadcast News Stations, Healthcare Professionals, and Medical Organizations.
  - TikTok videos were 30x more likely to be rated low quality (mDISCERN) while YouTube videos were more likely to be rated as high or moderate quality (GQS).

GQS Score	YouTube	TikTok
Low quality	5.88%	65.22%
Moderate quality	23.53%	5.80%
High quality	70.59%	28.99%

- **Video Characteristics Breakdown**
  - High-quality videos were significantly longer in length, but low quality videos were viewed significantly more times and received significantly more "Likes" overall. A significantly greater proportion of low quality videos were created by the General Public versus Broadcast News Stations, Healthcare Professionals, and Medical Organizations (most of which were high quality).
  - High quality videos had significantly greater odds to report the Prevalence/Incidence of COVID (11.0x), COVID Treatment Information (4.1x), and Outcomes (10.6x) compared to low quality videos.

CONCLUSIONS & DISCUSSION

- Based on this review, there is plentiful high quality content published to the YouTube platform, with the highest quality ratings from our review for those posted by academic institutions and professional organizations while ones posted by the general public were rated as low quality. TikTok videos, on the other hand, had a much lower odds of having high quality content as a whole, though users tended to consume more of the respective platform's videos in comparison to YouTube videos.
- Patients can easily access potentially valuable and accurate data from social media resources with fewer search criteria, especially on YouTube, where individuals can gather more detailed and accurate information regarding Long COVID.
- Some limitations from this study include the healthcare provider bias in the relative perspectives of what may be deemed a high-quality versus low-quality assessment of the videos on both platforms during data collection. TikTok also has an opaque search algorithm and should aim to become more transparent to give users a more accurate and accessible experience, especially in light of the COVID-19 pandemic. Another limitation was the subjectivity of the scoring tools used as well as the limited search capped at 100 searches per database.
- As novel research involving Long COVID continues to evolve, a similar review of future social media content can be done to assess for health information accuracy during this chronic and complicated disease process to improve the lives of the patients affected.

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SCAN ME

Analyzing Aquaporin 4 Immunoglobulin in Pediatric Patients Diagnosed With Neuromyelitis Optica

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OBJECTIVE

To evaluate AQP4-IgG trends of the pediatric NMO population from 2006-2022 at Texas Children's Hospital.

BACKGROUND

While still rare, within recent years there has been a growing population of pediatric patients diagnosed with NMO. Therefore, knowledge relating to pediatric NMO patients is ever-growing specifically regarding seropositive status to antibodies of aquaporin 4 (AQP4-IgG).[i] In a recent study of 38 pediatric NMO cases, 65% were positive with AQP4-IgG in serum or CSF in those that were tested. Some patients became seropositive more than 3 years after symptom onset despite serial testing.[ii]

METHODS

An IRB approved retrospective chart review for patients meeting 2018 international diagnostic criteria for NMOSD and diagnosed between January 1st, 2006, and November 15th, 2022 was completed by an independent examiner. The data was harvested with EPIC SlicerDicer software at Baylor College of Medicine/Texas Children's Hospital. This software initially identified 101 patients from the electronic medical healthcare record which was then narrowed down to 35 patients being diagnosed with NMOSD before the age of 18 and meeting the 2018 international diagnostic criteria for NMOSD. The following was collected from each NMOSD diagnosed patient: patient age, sex, date of birth, age and year of NMOSD diagnosis, and every AQP4-IgG test and date tested. This data was deidentified before sending to another independent examiner for statistical analysis. Z-tests were then used to calculate p values to determine any relevance of age of AQP4-IgG testing and result, as well as gender and AQP4-IgG testing result.

Patient Population Total	35
Male	9
Female	23
Mean Age	10.8 +/- 4.4
Seropositive	15
Seronegative	20

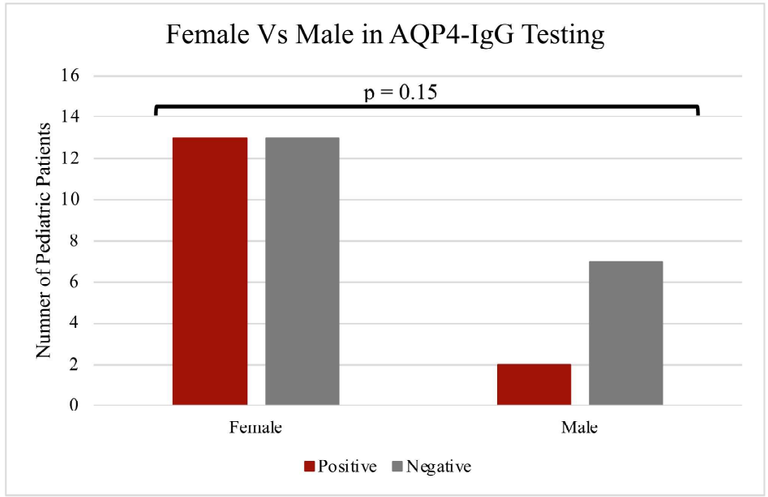

Figure A. Female Vs. Male in AQP4-IgG Testing

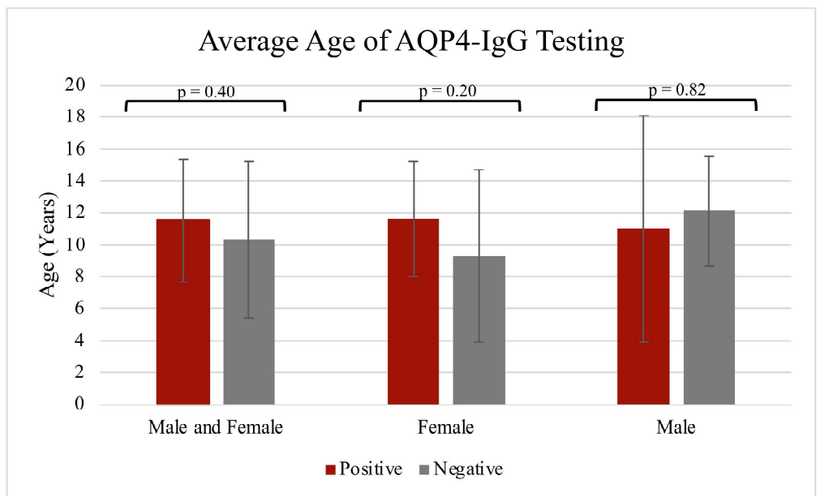

Figure B. Average Age of AQP4-IgG Testing

RESULTS

A total of 35 patients with pediatric-onset NMO were identified, 26 female (74.3%) and 9 male (25.7%). The mean age of diagnosis was 10.8 +/- 4.4 years. 42.9% (15) of patients were seropositive with 2 males and 13 females. 57.1% (20) of patients were seronegative with 7 males and 13 females. There was no significant difference found between males and females with serostatus establishment (p=0.15) (Figure A). When comparing average age of serostatus establishment of the whole population (seropositive at 11.5 +/- 3.8 years and seronegative at 10.3 +/- 4.9 years), AQP4-IgG status showed no correlation with average age (p=0.40). The average age of serostatus establishment for females alone testing seropositive was 11.6 +/- 3.6 years, and seronegative was 9.3 +/- 5.4 years, therefore AQP4-IgG did not differ for age of females (p=0.20). The average age of seropositive establishment for males alone testing seropositive was 11.0 +/- 7.1 years, and seronegative was 12.1 +/- 3.4 years, AQP4-IgG did not differ for age of males (p=0.83) (Figure B). One 10-year-old female who seroconverted within 1 year from seronegative to seropositive. Thirteen other AQP4-IgG negative patients remained negative despite serial testing, some for as long as 6 years. Among this patient population, there was also 3 (8.6%) myelin oligodendrocyte glycoprotein (MOG) antibody positive patients. These 3 patients were also noted to be AQP4-IgG negative, but still met criteria to be diagnosed with pediatric-onset NMO.

CONCLUSION

The seropositive status trends in the pediatric NMO population are not well understood. The results from this study analyzing age and gender with serostatus establishment are unsignificant, and more research is required to understand the lower seropositive status trends in the pediatric-onset NMO population in comparison to the adult-onset NMO population.

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Aplastic anemia within few months of receiving a solid organ transplant

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WILLIS-KNIGHTON
INTERNAL MEDICINE RESIDENCY PROGRAM

Introduction

Aplastic anemia is a rare but life-threatening complication of solid organ transplants, with a reported incidence of 0.7 per million in liver transplant recipients[1]. It requires prompt treatment, but the multitude of different etiologies that can cause cytopenia in solid organ transplant patients, makes it a diagnostic challenge.

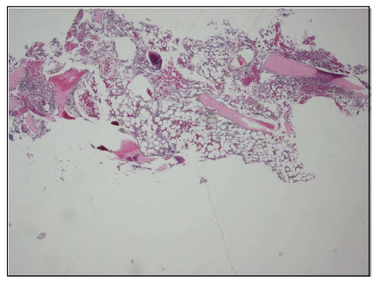
Case Description

- A 45-year-old man with type I diabetes S/P simultaneous pancreas–kidney (SPK) transplant maintained on tacrolimus, mycophenolate mofetil and prednisone.
- After one month of receiving transplant, he was hospitalized with elevated lipase, anemia and ARF with life threatening hyperkalemia.
- He was worked up for possibility of transplant rejection and received empirical treatment for rejection with methylprednisolone and increased dosages of tacrolimus and mycophenolate. His anemia was unresponsive to epoetin alfa.
- On pancreas biopsy, he tested negative for rejection but had to be readmitted within a month with pancytopenia.
- He was unresponsive to granulocyte colony stimulating factors.
- Bone marrow aspirates and core biopsy demonstrated hypocellular marrow with erythroid and myeloid hypoplasia.
- Serology- Tested negative for various pathogens known to cause cytopenia.
- Clinical progression- He had recurrent neutropenic fever, and eventually became transfusion dependent despite discontinuing the immunosuppressant agents.
- Diagnosed with aplastic anemia secondary to chronic immunosuppression and was transferred for bone marrow transplant evaluation.

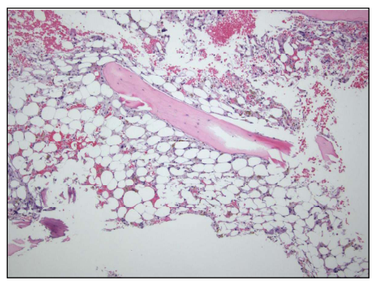
Investigation

WBC	0.0 10^6/l
RBC	2.36 10^9/l
Hgb	6.8 g/dl
Platelet count	2000/ mm^3
Reticulocyte count	0.1%
Serology (Parvovirus/EBV/CMV/BK)	Negative
Vit B12/folic acid/ Iron levels	All within normal limits

Bone Marrow Biopsy



40x magnification



100x magnification

Photomicrographs of the bone marrow core biopsy demonstrating a markedly hypocellular bone marrow for age with myeloid and erythroid hypoplasia (Hematoxylin and Eosin-stained sections)

Discussion

- Classification of aplastic anemia:
- **Inherited aplastic anemia** occurs because of a random gene mutation. It is most common in children and younger adults.
- **Acquired aplastic anemia** occurs because of an immune system problem. It is most common in older adults.

*Various causes of aplastic anemia in solid organ transplant recipients includes viral infections, HLH, GVHD and immunosuppression.

Key points

- Acquired aplastic anemia is a life-threatening complication with solid organ transplants and should be kept in mind while working up worsening pancytopenia in these patients.
- Aplastic anemia secondary to chronic Immunosuppression is a diagnosis of exclusion.
- The management can be very challenging, as early discontinuation of immunosuppressants involves a huge risk of losing the viable organ transplant.
- There are not many treatment options for acquired aplastic anemia in solid organ transplant patients other then supportive management, avoiding immunosuppressants and to consider bone marrow transplant which ended up happening in this patient.

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Beefing up! Fulminant hepatic failure and renal failure secondary to anabolic steroid use.

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Abstract

Trenbolone is an anabolic androgenic steroid (AAS) used as a veterinary steroid in cattle and is often abused by fitness enthusiasts and athletes to increase muscle mass. AAS have been known to cause psychological, neurological, endocrine and cardiovascular disturbances[1]. Hepatotoxicity associated with AAS has been described as self-limiting, resolving with supportive management. In this report, we present a rare case of life threatening fulminant hepatic failure due to suspected drug induced liver injury (DILI) in a young male with history of trenbolone and testosterone use who survived after receiving timely orthotopic liver transplantation. Recovery was complicated by renal failure secondary to hepatorenal syndrome and acute tubular necrosis (ATN). Accuracy of the Roussel Uclaf Causality Assessment Method (RUCAM) scoring system in such cases is unknown. Awareness of life-threatening effects of AAS use can help health care providers educate and caution patients about misinformation on social media.

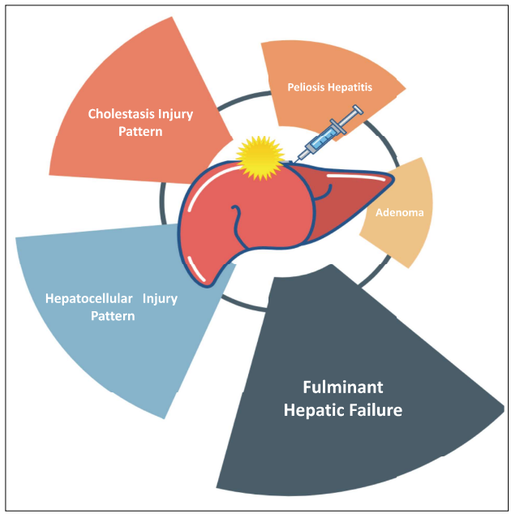

Figure 1. Various histological patterns of hepatotoxicity associated with AAS use [2]. This case describes a rare case of AAS associated fulminant hepatic failure.

Case Report

A previously healthy, well developed, **30 year old male** with RUQ pain, body ache for 2 days presented to the ED after he developed a fever of 103°F and petechial rash on hand and feet. He consumed alcohol occasionally and denied smoking and recreational drug use. The patient was an aspiring bodybuilder and admitted to using **trenbolone acetate and testosterone** weekly.

Laboratory findings included thrombocytopenia, AKI and markedly elevated liver function tests, with a **MELD score of 44**. Infectious, autoimmune, vascular and other toxicological causes of fulminant liver failure were ruled out and his liver failure was attributed to his trenbolone use.

Hospital stay (day)	INR	AST	ALT	Total Bilirubin	Creatinine	Est. GFR
	Ref. Range: (0.9-1.1)	Ref. Range: (3-45 U/L)	Ref. Range: (0-50 U/L)	Ref. Range: (0.2-1.3 mg/dl)	Ref. Range: (0.66-1.25 mg/dl)	CKD-EPI Ref. Range: >60
1	2.8	11332	8385	4	2.34	37.4
2	2.6	11408	9010	5.5	1.96	46.3
3	5.8	>15000	12151	8	1.89	33.5
4	5.6	>15000	8734	10.2	5.65	14.5
5	3.9	14989	7772	11.1	2.93	28.6
6	3.7	12909	6198	12.5	2.24	39.5
8	1.6	6677	2102	2.2	1.89	48.4
10	1.3	1710	1498	2	3.85	20.6
11	1.4	942	1115	1.7	4.5	17.1
16	1.4	119	320	1.5	5.70	12.9
2 months	-	35	29	0.4	1.29	56.5

Table 1. Trends in patient's liver and kidney function tests from Day 1- Day 16 and 2 months after orthotopic liver transplant.

The patient was listed for liver transplantation with Status 1A. He developed coffee ground emesis and altered mental status requiring **intubation for airway protection. Vasopressor** support and received multiple units of blood products were provided. **CRRT** was initiated which helped stabilise blood pressure. Patient received a **liver transplant on day 6 of admission.** Biopsy of native liver revealed **hepatocellular necrosis** with **2.5 cm benign hemangioma.** Post-op recovery was complicated by cerebral edema and bleeding at surgical site. Patient was transitioned to hemodialysis which was discontinue after 6 sessions. A polyuric phase of renal recovery was noted leading to suspicion of **ATN secondary to bile cast nephropathy** in addition to **hepatorenal syndrome.** Patient continued to recover with physical therapy and was able to walk independently upon discharge.

Discussion

1. **Anabolic steroid abuse can lead to life threatening hepatotoxicity.** While there have been reports of life-threatening myocardial infarction, dilated cardiomyopathy and heart failure, stroke secondary to thrombus formation, and even homicidal behavior, hepatotoxicity reported has been self-limiting[3]. This is the first case report of fulminant liver failure associated with AAS use.

2. **Utility of RUCAM assessment score may be limited in fulminant liver failure with suspected DILI.** Roussel Uclaf Causality Assessment Method (RUCAM) scoring system is based on comorbidity, biochemical and radiological findings in patients with suspected DILI[4]. There are limitations in calculation of RUCAM score in transplant patients as variables such as peak laboratory values and time to recovery cannot be estimated after transplant. In our case, R score was 93 (hepatocellular pattern) with RUCAM score of 6 ("probable" cause).

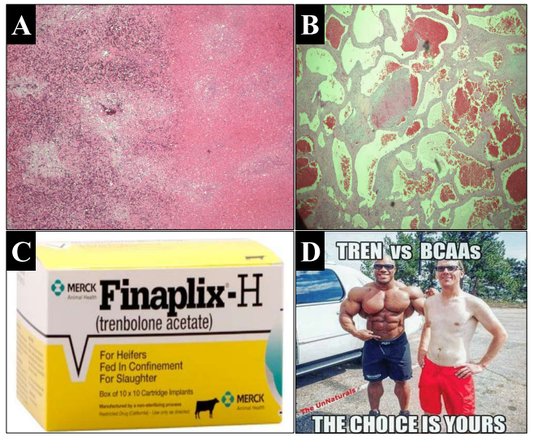

Image 1: [A] Photomicrograph of hepatic necrosis with loss of normal liver architecture (hematoxylin and eosin stained section, 40 X original magnification) [B] Photomicrograph of dilated vascular spaces diagnostic of hemangioma of the liver (hematoxylin and eosin stained section, 40 X original magnification) [C] Trenbolone acetate pellets for veterinary use [D] Example of memes on social media encouraging trenbolone use over branched chain amino acids like leucine, isoleucine and valine.

3. **Anabolic steroids are often produced by unsafe means.** AS are classified as Schedule III Controlled Substances per the US DEA. Finaplix-H is sold in pellet form for veterinary use. It is taken by oral, intra-nasal or subcutaneous route, diluted with solvents like dimethylsulfoxide (DMSO), natural oils etc.

4. **Anabolic steroid use is often promoted on social media without information about hazardous effects on health or need to consult a health care professional.** Our patient learnt about trenbolone by viewing videos on social media apps like TikTok, Instagram and blogs. Trenbolone is referred to as "tren", "Fina", "trenabol" on social media sites. It is important for health care providers to be aware of such trends and misinformation on social media to appropriately educate their patients about potential health hazards.

Acknowledgements

We would like to thank Gregory P. Wellman, M.D for his kind inputs on biopsy images for this case report.

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Scan QR code to see RUCAM scoring system.

Bertolotti's Syndrome: Uncommon Diagnosis of Chronic Low Back Pain

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Abstract

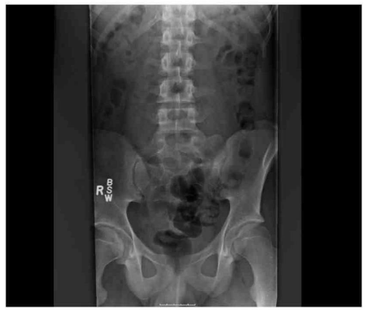
Bertolotti's Syndrome is the presence of pain usually in the lower back due to the fusion of the transverse process of the fifth vertebra onto the sacrum. Due its uncommon occurrence, it is often left out of evaluations of low back pain. This pain may present as either acute or chronic onset and may occur with radiculopathy. The reported incidence of sacralization of the last lumbar vertebra is between 4% to 30%; however, Bertolotti's Syndrome is not often thought of as a diagnosis, so the true incidence of the disease is not fully known. This case report is of a 13-year-old patient who presented to the clinic with acute low back pain that had not responded to pain medication. Through use of history taking, physical exam findings, and imaging we were able to diagnose the patient with Bertolotti's syndrome. Though there is no consensus as to the cause, Bertolotti's Syndrome should be considered in the differential in patients who present with unexplained lower back pain and physicians should knowledge of its diagnosis and treatment options.

Introduction

Bertolotti's Syndrome is a disease that normally presents with lower back pain due to an anatomical variant of the lumbosacral area of the spine. The transverse process of the last lumbar vertebra is often elongated and fused to the sacrum. This can cause movement issues nutation and counternutation and is a mechanical cause be a cause for lower back pain which can present with radiculopathy. Bertolotti's Syndrome was initially noted in 1917 by Bertolotti who attributed this lumbosacral fusion to chronic low back pain (Bertolotti 1917). Bertolotti's Syndrome has a rather debated incidence. According to Crane, J. et al, studies have shown that the between 4 and 36% of people have LSTV and that significantly more men seem to have higher rates of Bertolotti's than women.

Report of Case

A 13-year-old male present to the pediatric clinic with a three-day history of low back pain with difficulty in flexing, extending, side bending, and rotating his back due to the pain. The patient required assistance with ambulation. The patient's chief complaint was acute low back pain. Physical exam noted 5/5 strength, +2/4 reflexes, regular pulses in upper and lower extremities, with no radiculopathy. Patient tried taking OTC pain medications which provided little relief for the pain. Pain was kept gradually getting worse each day until the pain was unbearable enough to come to the pediatric clinic. Radiographs of the patient's lumbosacral spine was taken and showed elongation and fusion of the fifth lumbar transverse process to the sacrum. The patient was referred to orthopedics and the radiograph was sent to the radiologist for confirmation.



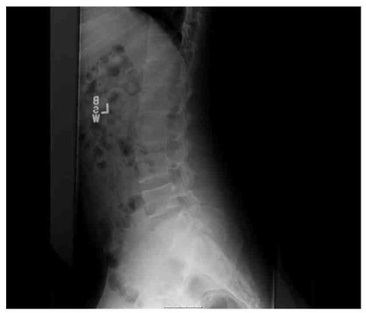


Figure 1: AP x-rays demonstrate the lumbar spine show that in this patient the right L5 is elongated and fused to the sacrum.
Figure 2: Lateral x-rays of the patient shows lumbar spine at the level of L5 being elongated and fused to the sacrum.

Discussion

In young patients, low back pain is often less common and is usually not given a clear diagnosis. The reported incidence of Bertolotti's Syndrome is between 4% to 30% in the general population. Bertolotti's Syndrome can be asymptomatic, but in those patients with chronic low back pain; only 4-8% are diagnosed. This disease is defined as lower back pain due congenital lumbosacral transitional vertebra (LSTV) defect This defect alters the biomechanics of lumbosacral vertebra so that movement can cause degeneration of the joints, especially if left undiagnosed for a long period of time. Therefore, it is important to diagnose these patients as early as possible so treatment can prevent or slow the degeneration and the patient's quality of life can improve. Management of low back pain first starts with thorough history taking. Patients can present with limited range of motion in the lower back in any plane of motion and can manifest L5 radiculopathy. The pain has been speculated to be due to the contact between the bones at this fusion site and can even present as hip or groin pain. Plain radiographs of the lumbosacral area show 80% effectiveness for identifying lumbosacral transitional vertebra. A CT scan can be used to help confirm diagnosis (Neelakantan, S. et al' 2016). Patients experience biomechanical alterations in movement both immediately above and below the LSTV. Below the LSTV movement is restricted to help protect against disc degeneration between the bones and the facets (Jancuska, J. M. et al' 2015). The patient in our case exhibited this feature as he reported extreme pain during even slight movement of his lower back. Injection of steroids into the site locally and anesthetics are often indicated as initial conservative management and diagnostics with the addition of physical therapy, Jönsson et al' demonstrated that the use of local lidocaine injections at the site of the pathological joint in patients with the disease showed that 5 out of 11 patients became pain-free while 4 reported immediate pain reduction. All 11 patients were provided surgical treatment. The outcomes of the patients were followed up and showed that 9 out of 11 patients had pain improvement or were pain-free. The authors of the study hypothesized that a response to local anesthetic injection may correlate to better success in surgical management (Jönsson B., et al 1983). This was also backed by a study on where L5 decompression surgery had resulted in patients being pain-free without the use of painkillers or other adjuncts for two years of follow up (Chang, CJ et al' 2022: 22, 36).

Conclusion

Bertolotti's syndrome is a mechanical alteration of the lumbosacral spine that can low back pain, though the pathophysiology is not yet known. Young patients presenting with unexplained low back should consider a lumbar x-ray to evaluate for Bertolotti's to establish an early diagnosis and prevent joint degeneration. It is essential to start with conservative methods such as activity modification, physiotherapy, steroid injections, and anesthetic injections. If these methodologies of treatments fail, that that pushes towards interventional and or surgical management. Surgical methods, which have proved only slightly superior to non-surgical management, can differ depending on the preoperative degeneration of the spine. Resection and posterolateral fusion are both equally effective methods. Still, they both hold general surgical risks and should only be favored for younger patients without and previous history of degenerative spine diseases.

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"Breathing Easy: Exploring the Efficacy of Nissen Fundoplication in Treating Reactive Airway Disease"

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Introduction

- Gastroesophageal reflux disease is frequently associated as an underlying cause of reactive airway disease in children, however, these findings are less commonly seen in adults.
- Gastroesophageal reflux disease commonly manifests through symptoms such as heartburn, and regurgitation.
- The exposure of acid to the esophagus can also cause bronchoconstriction via a vagally-mediated reflex or an increased airway hyper-responsiveness through a vagally-mediated pathway. Less commonly it may lead to extra-esophageal symptoms which are augmented due to micro aspiration of the acid into the airways with subsequent inflammatory response and bronchoconstriction.

Case Presentation

- A 60-year-old female with a past medical history of GERD presented to the emergency department for respiratory distress.
- On the morning of admission, she woke up with possible feeling of aspiration, leading to wheezing and respiratory distress, became cyanotic ultimately having a respiratory arrest requiring EMS to place an emergent airway.
- On arrival, labs were notable for acute respiratory acidosis, mild lactic acidosis, acute kidney injury, and leukocytosis. She got intubated , otherwise hemodynamically stable.
- The patient had multiple hospitalizations in the past with episodes of severe reactive airway disease clinically related to reflux resulting in severe bronchospasms, hypercapnic respiratory failure, and requiring intubations.
- She underwent a EGD, which was benign, and was receiving maximum PPI however, her reflux symptoms persist.
- A pulmonary workup was also done where PFT's were largely unremarkable without obstruction or restriction, no bronchodilator response, and normal DLCO with normal lung volumes except for mild elevation in residual volume likely indicative of some hyperinflation and she was continued on PPI therapy.
- Gastroenterology was consulted and it was determined at the time, her intermittent reactive airway disease was triggered likely by reflux and the best course of action was to address the same and she was eventually taken for a Nissen fundoplication procedure. Shortly after the procedure, the patient was discharged home and was doing well, reported no further episodes of reactive airway disease after the procedure.

Discussion

- The relationship between reactive airway disease and GERD is not fully understood, however, the most common mechanism is by the exposure of acid from the esophagus may produce bronchoconstriction and exacerbate airflow obstruction.
- The esophageal acid causes bronchoconstriction via vagally mediated reflex. Micro aspiration of the gastric contents into the lungs further augments the bronchoconstriction as the gastric contents in a non-acidic environment can cause inflammation and damage the upper airway epithelium. These patients typically present with cough, wheezing, and shortness of breath, most commonly after an aspiration event.
- Diagnosis of reactive airway disease secondary to GERD is often difficult and is usually based on clinical symptoms. These patients often have minimal response to bronchodilators and inhaled corticosteroids and workups including pulmonary function tests and a chest x-ray are usually normal.
- Patients that are suspicious for GERD but atypical should be evaluated by a gastroenterologist for evaluation. Upper endoscopy done in these patients often show evidence of esophageal inflammation consistent with GERD and treatment with proton pump inhibitors and lifestyle changes led to improvement in their respiratory symptoms.
- Some patients may have refractory respiratory symptoms, despite prolonged use of PPI's and lifestyle modifications, in these cases procedures such as Nissen Fundoplication were necessary. This procedure involves reinforcing the lower esophageal sphincter, where the fundus of the stomach is wrapped around the lower esophagus. This prevents stomach acid from flowing back into the esophagus.
- A case series of patients with gastroesophageal reflux disease and respiratory symptoms undergoing fundoplication from 1987 to 1994 at a tertiary university hospital were studied and of 118 patients that were undergoing fundoplication for cardinal symptoms of gastroesophageal reflux disease, 63 had respiratory symptoms. Postoperative follow-up was available for 50 patients at a median of 3 years. Fundoplication relieved the respiratory symptoms in 76% of (38/50) of the patients. Reflux symptoms were relieved in 86%(43/50) of the patients.[1]

Conclusion

- Reactive airway disease is a condition that often presents with symptoms that are similar to asthma, and one of the underlying causes is GERD.
- Patients usually experience relief of the symptoms with long-term use of PPI, however, respiratory symptoms persist in a few patient populations, and Nissen fundoplication was both effective in controlling GERD symptoms, reducing PPI use and relief of respiratory symptoms.

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*GERD: Gastroesophageal reflux disease
*PFT: Pulmonary function tests
*PPI: Proton Pump Inhibitors
*EGD: Esophagogastroduodenoscopy

Cardiac Emergency: Acute Saddle Pulmonary Embolism, Intramural Hematoma, and Aortic Aneurysm with Dissection

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ABSTRACT

Aortic dissection and pulmonary embolism are two of the most common cardiopulmonary emergencies that are associated with poor prognosis and high mortality rates. Typical presentations for these conditions can widely vary from acute chest pain with severe symptoms such or can present painless with mild symptoms. The appearance of saddle pulmonary embolism can rarely occur especially with intramural hematoma, and aortic dissecting aneurysm.

The aim of this study is to report the case of a 50 years old African American female patient status post operative type A Aortic dissection with saddle pulmonary embolism, bilateral segmental pulmonary emboli, posterior aortic arch hematoma, and thoracic dissecting aneurysm. The patient presented to the clinic four weeks after her surgery, and we noticed that she had a severe shortness of breath, hypoxia, and sinus tachycardia. The patient was advised to be admitted for further investigations.

At the hospital, diagnostic imaging such as X-ray, CT scan, CT angiogram were performed. The patient was placed on anticoagulation and underwent a catheter thrombectomy procedure. Next day, she developed a rupture of her thoracic aneurysm which resulted a hemothorax completely opacifying her left lung. She was transported to another facility where she underwent a thoracic endovascular aortic aneurysm repair procedure.

This unique case shows an atypical presentation of simultaneous occurrence of fatal conditions that require early diagnosis because of their poor outcomes. Early intervention and judicial treatment are very important in emergent scenarios to prevent fatalities.

BACKGROUND

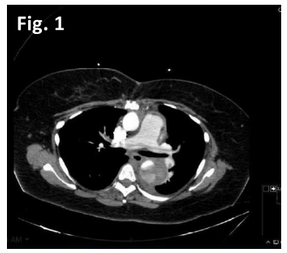
- Aortic dissection can be described as a tear in the intima which is the inner lining of the aorta. The rupture can cause blood to flow between the layers of the aorta, leading to separation of intima from the surrounding media and adventitia layers causing a false lumen. It can present as tearing in the chest or back pain with unstable hemodynamic presentations with severe complications.
- Pulmonary embolism (PE) is defined as a condition where a foreign body, most often a blood clot migrates from deep vein thrombosis causes a partial, or total occlusion of the trunk or in the branches of the pulmonary artery.
- An embolism in the pulmonary artery can lead to a reduced oxygen supply to other organs which can be lethal if not treated accordingly. There are various types of PE based on the anatomical location of the embolism. For example, Saddle PE is the rarest type and presents with the clot lodging at the bifurcation of the main pulmonary artery with approximately occurrence of 6% of patients.
- Most common type of PE presents happens beyond the bifurcation of the main pulmonary artery and occur distally at the lobar, segmental or subsegmental branches. PE can also present as unilateral or bilateral which depends on the side of the arteries obstructed where in the left, right, or both lungs.

OBJECTIVES

- Present rare case of the development of acute saddle pulmonary embolism with bilateral segmental emboli simultaneously with aortic dissection.
- Report the therapeutic dilemma in the case as the use of anticoagulation is the mainstream of treatment for pulmonary embolism but is contraindicated in the presence of intramural hematoma.

METHODS

- A 50-year-old female started experiencing fatigue, shortness of breath, and tachycardia at the primary care clinic.
- She admitted to the hospital to obtain imaging and further investigation.
- Patient was found to have pulmonary embolism, intrameal hematoma and aortic aneurysm.
- Patient underwent an EKOS procedure and her post operative course with complicated with thoracoabdominal dissection and left hemothorax which led to an emergent air transport for a TEVAR procedure.



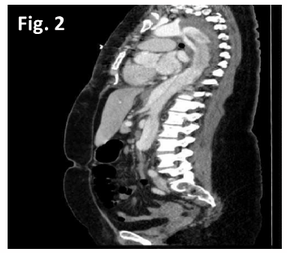
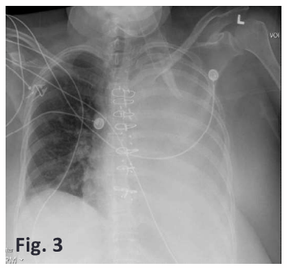


Figure 1. CTA imaging of the patient during admission shows an acute saddle pulmonary embolism present.

Figure 2. Imaging on the third day of admission shows the aortic dissection visible clearly with a false lumen present extending to the iliac artery.



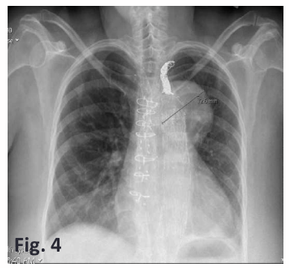


Figure 3. CXR on the third day of admission shows a complete opacification of the left hemothorax of the patient while the right lung is clear.
Figure 4. CXR during clinic follow-up after the post operative aortic repair showing endovascular stent graft placement and clearance of the left hemothorax with the presence of 7.2.6 cm aneurysm presence at the aortic arch.

RESULTS

Emergency medicine:

- 2L of oxygen via nasal canula
- IV Fluids
- CXR
- CT
- CTA
- Aspirin, heparin infusion started
- Metoprolol

Surgery/ICU :

- EKOS Procedure with tPA
- Cefepime
- Albumin
- Normosol for fluid loss
- Precedex for tachypnea, anxiety
- PRBCs transfusion

Discharge Plan:

- Emergency air transport to Dallas for a TEVAR procedure.

CASE PRESENTATION

A 50 years old African American female presents to the primary care clinic with a recent aortic dissection repair performed 4 weeks ago. She has a past medical history of hypertension and hyperlipidemia. At the clinic, she complained of sever shortness of breath, hypoxia and sinus tachycardia on EKG which led for her admission to the hospital. The patient was initially placed on 2L of oxygen *via* nasal cannula and basic labs with BNP and Troponins ordered.

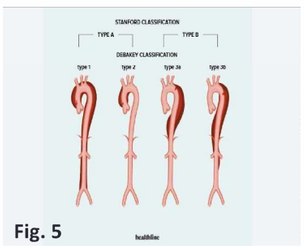
CT angiography of her chest was obtained and showed posterior aortic arch measuring 6.1 cm with increased density posteriorly that could reflect intramural hematoma/ acute dissection or dissection repair. Further investigation with a CT angiograph of her chest showed acute bilateral segmental pulmonary emboli with saddle embolus. It also showed posterior aortic arch with increased density that was consistent with acute intramural hematoma.

A referral to cardiovascular recommended placing the patient on anticoagulation, Protonix, and admission to the intensive care unit. The case was discussed with cardiothoracic surgery for a consideration for catheter thrombectomy given the risk of hematoma rupture. They did agree the patient should be started of heparin infusion and to undergo a Ekosonic Endovascular System (EKOS) procedure to dissolve blood clots.

Next day, the patient began having increasing shortness of breath and tachycardia. A bedside Ultrasound was performed and showed Inferior Vena Cava collapsibility of greater than 50%. Also, she slightly became hypotensive of which she received IV fluids, albumin bolus as well as Normosol bolus. She began to have increasing tachycardia, tachypnea and anxiety, and which was placed on Precedex with resolution. Overnight, her hemoglobin started to drop (6.4-6.9) and was transfused 2 units of pack red blood cells.

An X-ray was showed complete opacification of the left hemithorax with underlying atelectasis or infiltrate. A repeat CT chest and pelvis angiograph showed a large left pleural effusion that developed due to aneurysm rupture, with intramural hematoma still present, and an aortic dissection extending into the right common iliac artery.

The patient was transported by air to another facility to undergo a thoracic endovascular aortic repair procedure. She returned to the clinic a month later for a follow-up with a healing incision site. She had no complaints and was able to do her daily activities with the help of a walker.



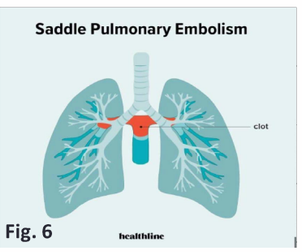


Figure 5. Visual representation of Aortic Dissection, photo from Healthline**.**
Figure 6. Visual representation of Pulmonary Embolism, photo from Healthline.

CONCLUSIONS

- Simultaneous occurrence of pulmonary embolism, intramural hematoma, and aortic aneurysm is a rare diagnosis.
- As these conditions can present with non-specific symptoms to hemodynamic instability based on the severity of the disease
- It is important to have a high degree of clinical suspicion is necessary to diagnose these conditions as they carry a very high mortality risk unless medical and surgical intervention is taken.

Comparison of Laparoscopic vs Robotic Cholecystectomy: a Single Institution's Experience with Economic Feasibility and Measures of Outcome

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Willis-Knighton Health System

WILLIS-KNIGHTON
GRADUATE MEDICAL EDUCATION

Abstract

Since FDA approval over two decades ago, the popularity of robotic-assisted or robotic cholecystectomy has grown, although uptake has not been meteoric due to need for further training for many already practicing surgeons and the cost-associated barriers some institutions face in attaining equipment. Since its introduction, robotic cholecystectomy has been often compared to its predecessor, laparoscopic cholecystectomy. It has now been common for about 35 years in America and seen as the standard for much of that time. There is a considerable amount of comparison of laparoscopic cholecystectomy (LC) vs robotic cholecystectomy (RC), as the two most prevalent modalities for gallbladder removal. These comparisons routinely focus on measures of operative outcome and cost. In our system, we have one campus that has done predominantly LC and another that has done predominantly RC since it became available to our surgeons. This retrospective study was done to assess some outcome measures, but with the focus being on cost. With the gradual specialization of the respective campuses in terms of surgeon expertise, OR staff, and inventory, we believe the experience at our institution will provide a unique perspective on the economic feasibility of RC as well as build on the definition of other differences already existing between LC and RC in the literature. In our analysis of institutional data, we used conversions to open and number of admissions from outpatient procedures as simple measures of outcome. For cost analysis, we looked at the average direct cost per procedure. Cholecystectomies performed as the primary procedure by general surgeons for benign gallbladder disease with initial minimally invasive approach from 2019 to Q1 2022 were pulled and divided by campus. This resulted in a final n = 2696 after exclusion criteria were set, including 1430 LC and 1266 RC. Mean values for cost were compared using an unpaired t test and significance between outcome measures were detected using chi-square analysis (statistical significance $p < 0.05$). We found that the average direct cost for RC was higher compared to LC, ($5214.07 vs $4208.28, p<0.0001). Although low for both procedures, there was significantly higher conversion to open procedure in LC than RC (0.39% vs 1.25%, p = 0.0149). Finally, admission after a planned outpatient procedure was found to be 0.14% in LC, with 5.21% in RC (p<0.0001). In conclusion, this retrospective study showed that even with specialization of surgeons, OR teams, and campuses for one MIS modality over the other, the cost of using robot technology for this procedure is significantly higher. While conversion to open is higher in LC, unplanned admission after outpatient procedure was higher for RC, so more measures of outcome will need to be examined within institutional data to further define if other reported differences in modality exist within our system.

Rationale

In the literature, there are several different comparisons made between laparoscopic cholecystectomy (LC) and robotic cholecystectomy (RC). There is a decent evidence to show that there is no truly "superior" procedural method for minimally invasive gallbladder removal. However, the literature does support that there are higher costs associated with RC. During review of existing literature, it was noted that a considerable number of these studies include data from multiple hospital systems, may have a low number of patients, may be large academic centers, and overall hospital cost was regularly used. We believe the advantages we exhibit here include that we have campuses that have become specialized to procedure type, no resident presence in examined cases, a comparatively large volume over a shorter period, and uniform cost accounting as a result of being in the same hospital system and region.

Methods

- Data for primary cholecystectomies (with ICD-10 for percutaneous endoscopic approach) performed at two campuses, Willis-Knighton Medical Center (WKMC) and Willis-Knighton Bossier (WKB) performed between 2019 and Q1 2022 was pulled with a total n=3091
- Exclusion criteria were utilized to filter the data:
  - Benign disease only
  - Exclusion of procedures by the transplant service
  - Exclusion of known laparoscopic procedures at WKMC
- This resulted in a final n=2696, n=1430 for WKB and n=1266 for WKMC. In institutional data, laparoscopic and robotic cholecystectomy are not recorded differently in their ICD-10 procedure. Due to surgeon preference, campus equipment availability, and for the purposes of this initial interrogation of institutional data, cholecystectomies performed at WKB are accepted to be laparoscopic, and those at WKMC robotic
- GraphPad Prism software version 9.5.0 was used for analysis
- Average direct cost was compared between groups using an unpaired t-test
- Day surgery admissions and conversions to open were compared between groups using chi-square analysis
- Statistical significance was set to $p < 0.05$

Results

Average direct cost for robotic cholecystectomy was found to be significantly higher

Average Direct Cost

Laparoscopic	Robotic
$4208.28	$5214.07
(SD $2272.99)	(SD $5004.62)
(-19.29%)	(+23.91%)

P < 0.0001

Average of direct cost was the measure used due to its closer relation to procedural costs without including costs related to length of days in hospital stay and other overhead related costs

Conversion to open procedure was more common in laparoscopic than robotic cases

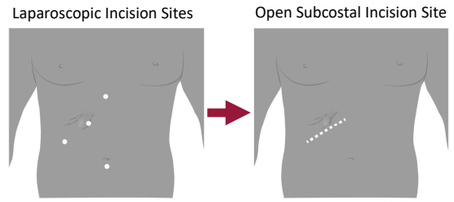

Figure 1. Conventional port site incision locations are shown on the right. Port site incisions typically range from approx. 5-12 mm. On the left is a subcostal incision, typical of the approach for open cholecystectomy. This incision is typically greater than 12 cm long.

Conversion to Open Procedure

Laparoscopic	Robotic
1.25%	0.39%
(18 conversions in 1430 cases)	(5 conversions in 1266 cases)

P = 0.0149

Post-operative admission after planned day surgery was more common after robotic procedures

Outpatient Admissions

Laparoscopic	Robotic
0.14%	5.21%
(2 admissions in 1430 cases)	(66 admissions in 1266 cases)

P < 0.0001

Conclusions

This research shows that even with virtual separation of modalities by campus and specialization, the cost of robotic cholecystectomy is still significantly higher than a laparoscopic procedure. While this finding does not depart from what is reported elsewhere in the literature, we believe that it does provide valuable perspective- namely that even a mainly-robotic center cannot cut cost enough to be comparable to its laparoscopic counterpart. However, we believe it is important to note that the difference in average direct cost within this timeframe in our system is lower than the difference in other cost parameters reported in recent, similar studies. As others have reported, the reasons for this disparity in cost is likely due to higher cost of robotic system-associated consumables, maintenance, and acquisition costs. We chose to report on admission after planned outpatient surgery as a measure of outcome, as we felt this was a good evaluation of surgeon comfort in their preferred minimally-invasive (MIS) modality. While this was significantly more common in robotic cases, there may be other factors warranting closer inspection such as selection bias by surgeons and severity of disease in these cases. Again, in line with existing literature, our conversion rates were higher in laparoscopic cases, although still a very low incidence in the laparoscopic group. Overall, we believe this study serves to strengthen several points in the debate over these MIS approaches. While more expensive, it may be possible that the gap in cost could be closed in on by specialization, as may be the case in our institution, and as costs for robotic consumables become more affordable. The chief limitation in this study is the lack of specific reporting of laparoscopic and robotic cholecystectomy by ICD-10 recordings in institutional data, which can be resolved in future iterations of this research by comparing to robotic case logs. In the future, we can gain further depth in examining severity of disease in all cases experiencing conversion and comparing other measures of outcome such as length of stay, 30-day readmission rates, and operative times for more accurate comparison to existing reports in the literature.

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Acknowledgments

Special thanks to Dr. Krystle Trosclair and Mr. Bruce Stroud for data collection and preparation, as well as mentorship in completing this project.

Comparison of urologic complications between uretero-neocystostomy and uretero-ureterostomy in kidney transplants

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INTRODUCTION

- Uretero-neocystostomy (UN) is the most common technique used for ureteral anastomosis in renal transplants. Primary uretero-ureterostomy (U-U) in renal transplant is another technique of ureteral anastomosis that has fallen out of favor for unknown reasons.
- There is limited published literature comparing the U-U technique versus the conventional U-N technique.[1-6]
  - Gurkan et al. conducted a prospective randomized controlled trial that included 75 recipients of renal allografts from living donors. They demonstrated a similar incidence of urologic and anastomotic complications between the U-U and U-N groups.[2]
  - A 2016 meta-analysis which included 6 publications found that there was a similar incidence of complications with each technique, however there was a difference in the specific type of complications seen.[3]
- Aim: To determine if there is a difference in the incidence of complications between primary uretero-ureterostomy versus conventional uretero-neocystostomy

METHODS

- John C. McDonald Regional Transplant Center internal database was used to identify patients who underwent renal allograft transplantation at Willis Knighton
  - Study period: January 2016 – April 2022
- Technique was determined in the OR at the time of transplantation and was dependent on the expertise of the surgeon and anatomy of both the donor and recipient
- Exclusion criteria: multi-organ transplant, en bloc transplant, foley duration greater than 6 days, foley in place at discharge, or graft loss less than 10 days from date of transplant
- Data collected on demographics, operative time, estimated blood loss, urine leak, ureteral stricture, development of lymphocele, time to removal of foley catheter, and length of stay
- Outcomes:
  - Primary: Overall rate of urologic complication between U-N and U-U groups
  - Secondary: Incidence of secondary uretero-ureterostomy between U-N and U-U groups
- Statistical analysis: Categorical variables were compared with Chi-Square test and Continuous variables were compared with Wilcoxson rank-sum test and two-sample Student's T-test.

RESULTS

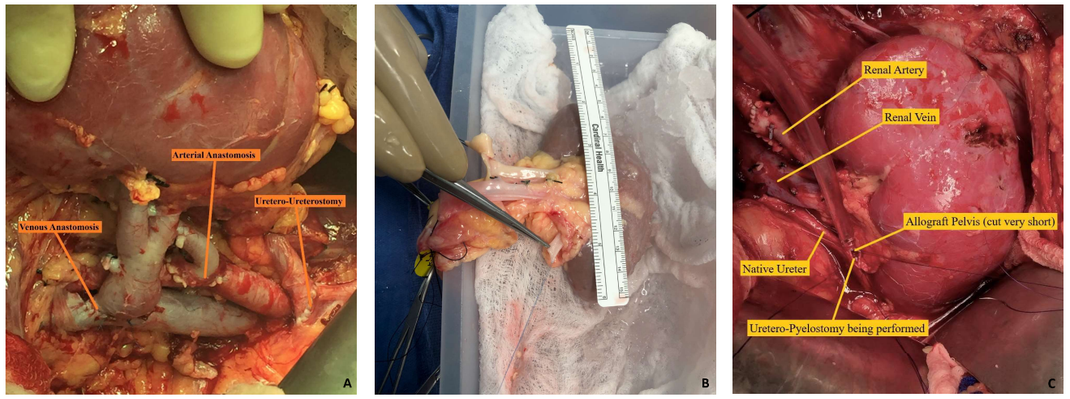

Figure 1. A. Completed arterial and venous anastomosis with donor renal artery connected to recipient external iliac artery and donor renal vein connected to recipient external iliac vein. Completed ureteral anastomosis with donor ureter sewn directly to the recipient's native ureter. **B.** Cadaveric renal allograft with extremely short ureter secondary to being unintentionally cut during organ procurement. **C.** Native ureter sewn directly to the renal pelvis of the allograft.

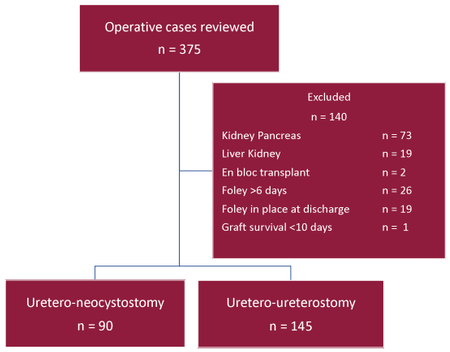

Figure 2. Study groups

- There was no statistically significant difference in age or race of patients between the two groups. The median age for the U-N group was 48 and the median age for the U-U group was 47.
- Observed a higher rate of leak in the U-U group, however this was not significant (p = 0.27)
- The overall incidence of urologic complications was not statistically significant between the two groups. (p = 0.06)
- Significantly more J-J stents were utilized in the U-U group compared to the U-N group (p = <0.001)

Table 1. Comparison of the rate of complications and the type of complications between the uretero-neocystostomy and uretero-ureteroureterostomy groups.

	U-N	U-U	P-value
Leak	1 (1.1%)	5 (3.4%)	0.27
Stricture	7 (7.8%)	2 (1.4%)	0.01
Lymphocele	6 (6.7%)	3 (2.1%)	0.07
Overall	13 (14.4%)	10 (6.9%)	0.06

Table 2. Comparison of operative data and clinical observations between the uretero-neocystostomy and uretero-ureterostomy groups.

	U-N	U-U	P-value
Donor type **Cadaveric** **Living**	76 (84.4%) 14 (15.5%)	122 (84.1%) 23 (15.8%)	0.95
J-J stent	58 (64.4%)	141 (97.2%)	<0.001
OR time in hours (mean, SD)	3.1 (± 0.9)	2.6 (± 0.6)	<0.001
EBL in mL (mean, SD)	195 (± 155)	174 (± 150)	0.31
Duration of Foley (median, IQR)	4 (3 – 5)	3 (2-4)	<0.001
LOS in days (mean, SD)	5.1 (±1.9)	4.8 (± 1.7)	0.15
Secondary U-U	0	0	----

CONCLUSIONS

- Uretero-ureterostomy is a safe and feasible technique for ureteral anastomosis in kidney transplant with a similar rate of complication as the conventional uretero-neocystostomy technique.
- Advantages of the U-U technique include earlier foley removal and shorter OR time.
- The U-U technique may also decrease the number of donor organs that are discarded when the ureter is inadvertently cut during organ procurement
- Rate of stricture in the U-U group is significantly less than the U-N group, however this may be confounded by the significantly higher utilization of J-J stents in the U-U group compared to the U-N group. Alternatively, it is possible that a higher rate of stricture was observed in the U-N group due to ischemic compromise secondary to long ureter length.
- Limitations
  - Retrospective single-center study
  - No true randomization
- Future directions
  - Prospective, randomized controlled trial
  - Investigate if there is a difference in urologic complications for both U-U and U-N techniques in cadaveric vs living renal allografts
  - Adjust for the use of J-J stents between groups

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Confirmed Case of Spontaneous Membranous Dysmenorrhea

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Abstract

Membranous dysmenorrhea is the expulsion of the endometrial lining of the uterine wall, also known as a decidual cast, at a single point in time. There are few confirmed case reports of this diagnosis and often overlooked as a differential diagnosis for females presenting with pelvic pain. A 23-year-old female presented to the clinic for a follow up for oral contraception and has complaints of abdominal pain of 1 week duration, with an episode occurring the night before with extreme sharp pain. Past medical history includes endometriosis, chronic pelvic pain, a previously treated chlamydial infection and anxiety disorder. Urine analysis was within normal limits and a complete blood count resulted in an elevated white count, decreased mean corpuscular red blood cell volume, an increased red blood cell distribution width and an increased platelet count. Rather nonspecific laboratory results, along with the patient's previous diagnosis and history of events, a follow up appointment was recommended the following week. The next morning the patient presented to the emergency department in unbearable pelvic pain and passed a uterine cast. There are many speculations of why these diagnoses occur and is believed to be to imbalances of estrogen and progesterone likely due to oral contraception. This case report provides a confirmed diagnosis of membranous dysmenorrhea in a patient with a significant pelvic history that may attribute to causation of this diagnosis.

Imaging

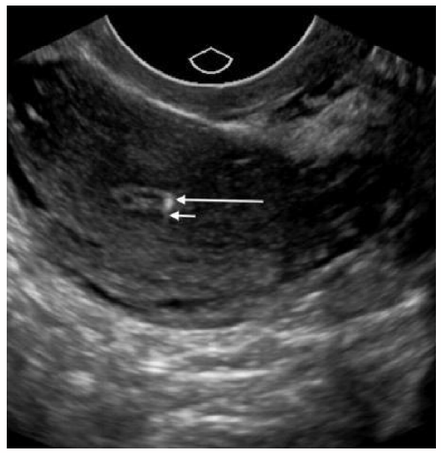


Figure 1. Ultrasound of decidual cast within the uterus.

Uterine Cast

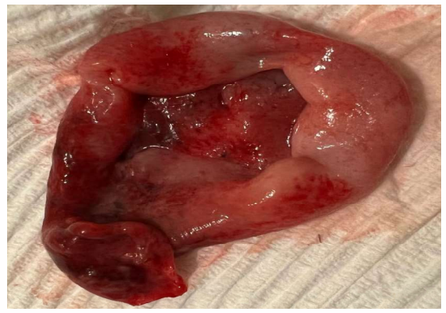


Figure 2. Vertical view of the patients complete decidual cast

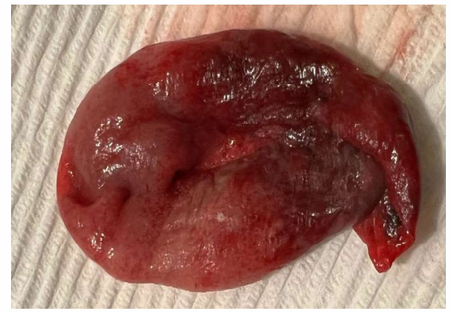


Image 3. Horizontal view of decidual cast showing the outline of the endometrial wall of the uterus.

Patient Presentation

HPI:
A 23-year-old female presents to the clinic for a follow up for oral contraception and has been having pelvic pain. She describes her pain as 5/10 that is intermittent and sharp, occurring roughly 4 times this past week that has recently intensified. The pain is located in her lower abdomen and says ibuprofen as helped minimally. The night before she claims her pain was so severe that she almost went to the emergency department. The proceeding day the patient presented to the Emergency department in excruciating pain and passed a uterine cast.

Subjective:
- **Past Medical History:** Chronic Pelvic Pain, Chronic back pain, Endometriosis, previously treated chlamydia Infection, anxiety disorder

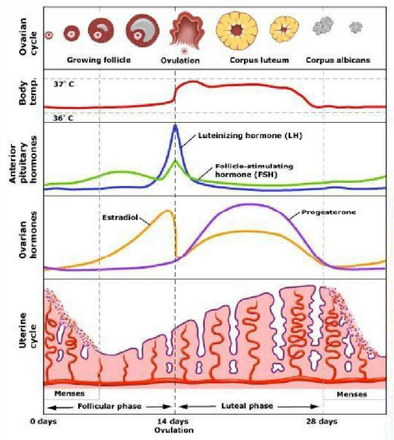
ROS:
- WDWN female currently in no acute distress
- No muscle aches or pain
- (+) abdominal cramping with no changes in bowel movements
- No urinary frequency or dysuria

Objective:
- **Temp**: 98.6 F **BP:** 140/91 **O2 Sat:** 99% **Pulse:** 90 bpm **Weight:** 151 lbs. **BMI:** 27
- **WBC** - 12.7, **Hgb** – 13.1 , **MCV** – 79, **RDW** –15.2 **PLT** – 456, **AST** – 16, **ALT** – 24,

Urinalysis:

Analyte	Value		
Leukocytes	Negative	Specific Gravity	1.005
Nitrite	negative	Ketone	Negative
Urobilinogen	.2	Bilirubin	Negative
Protein	Negative	Glucose	Negative
pH	6.5	Appearance	Clear
Blood	Negative	Color	Yellow

Pathophysiology



Although it is not proven, a suspected cause of membranous dysmenorrhea is from oral contraceptives. It is believed that the progesterone component of OCP's when discontinued or not taken correctly may cause the endometrial lining to disassociate from the uterine wall, creating a cast that becomes expelled.

Conclusion

A rare diagnosis with few reported cases, this presentation provides a differential for women presenting with pelvic pain. The pain is typically severe in nature with few distinguishing features on physical exam. Clinical index of suspicion should be increased in young female patients taking oral contraceptives who may not be compliant or have recently begun oral contraception.

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Diabetic Striatopathy- A rare case of hemiballismus as a presenting symptom of undiagnosed diabetes mellitus

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Willis-Knighton Health System[1] and Other Affliliation[2]

Abstract

Nonketotic hyperglycemic hemichorea-hemiballism (also referred to as "diabetic striatopathy") is a triad of hyperglycemia associated with chorea/ballism and/or neuroimages of striatal abnormalities. Central nervous system dysfunction is an uncommon and a late complication of long-term uncontrolled hyperglycemia. We report a case of a 58-year-old male patient who exhibited unilateral hemiballismus in his left side due to long standing undiagnosed Type II Diabetes. Strict hyperglycemic control along with tetrabenazine which is a medication commonly used to treat symptoms of movement disorders, led to a significant improvement of involuntary movements. Along with his clinical improvement , the reduction of hyperintensity on MRI brain also suggests that the underlying pathology may have been related to hyperglycemia-induced damage in the basal ganglia. This case examines the clinical presentation, highlighting the rare neurological complication of a patient with longstanding undiagnosed Type II Diabetes through the diagnostic evaluation and medical treatment and prognosis. We also highlight the importance of prompt diagnosis of type 2 DM based on high degree of suspicion to improve the prognosis of detrimental and long term complications .

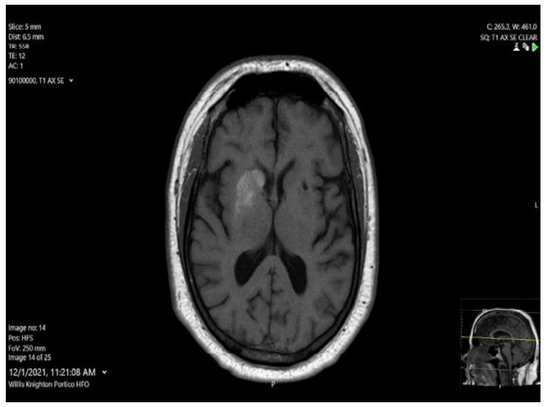
Introduction

Hemiballismus is a rare and severe movement disorder caused by a contralateral lesion of the basal ganglia. Characterized by involuntary violent, jerky, and high amplitude movements of the ipsilateral limbs at rest and also with voluntary movements but not during sleep. Common causes of hemiballismus include: stroke, hemorrhage, infection, drug abuse, and neoplasms. Hemiballismus is often caused by a lesion or damage in the contralateral subthalamic nucleus or globus pallidus interna in the basal ganglia of the brain as they appear to regulate cerebral coordination physiologically. Central nervous systems lesions, particularly in the basal ganglia, are a rare complication of Type II Diabetes[1]. In few cases, long-standing uncontrolled hyperglycemia has been identified as a potential cause of hemiballismus. Hyperglycemia is a condition in which blood glucose levels exceed 125 mg/dL, and it is associated with a high risk of developing neurological complications when left untreated[2]. In a study conducted by Dalmolin et al. in 2016, it was found that hemiballismus was a neurological complication experienced by 3.2% of patients with Type II Diabetes[3]. It is imperative to remain current and consistent with disease management as well as screening, and diagnostic procedures for Type II Diabetes, in order to prevent serious neurological complications, because they can present a major challenge to a patient's daily life. Therefore, a high index of suspicion is required to diagnose the root cause of hemiballismus.

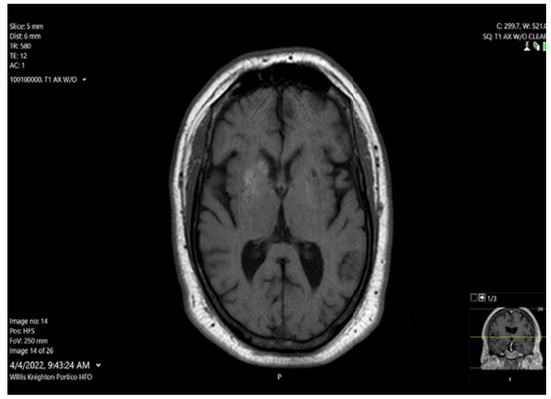
Case Presentation

An overweight 58-year-old male patient with a past medical history of hypertension, hyperlipidemia, and obstructive sleep apnea who had not been recently evaluated by a primary care physician, presented to a neurology clinic with complaints of sudden onset jerky movements in the left upper and lower extremities in September 2021. On initial evaluation by the neurologist, the patient was found to have a significantly elevated glucose level at 326 mg/dL and hemoglobin A1C of 11.8% and was diagnosed with Type II Diabetes. An MRI depicted a high T1 signal involving the right neostriatum and minor involvement of the globus pallidus. A further diagnosis of hemiballismus due to uncontrolled Type II Diabetes was made in December 2021 after ruling out other causes of hemiballismus.

The initial treatment regimen focused on strict glycemic control and reducing involuntary movements. The patient was prescribed Metformin 1000 mg twice daily, Semaglutide subcutaneously weekly, and Lantus twice daily in addition to a sliding scale. To manage the hemiballismus, the patient was initially prescribed Amantadine, but due to his poor response, his medication was later switched to Tetrabenazine which was well tolerated. Additionally, the patient was concurrently taking Olmesartan and Atorvastatin to manage his hypertension and hyperlipidemia respectively. In January 2022, the patient's repeat hemoglobin A1C had decreased significantly to 7.4 % and his hemiballismus symptoms also gradually decreased during this period. Repeat MRI brain also revealed improvement in hyperintensity in basal ganglia, implying that strict glycemic control helps in the management of hemiballismus secondary to Diabetes Mellitus.



T1 - weighted MRI completed on December 1st, 2021 depicting lacunar infarctions in the right basal ganglionic regions and corona radiata. Chronic microvascular ischemic and atrophic changes are also present.



T1-weighted MRI completed on April 4th, 2022 depicting decreased hyperintensity in the right basal ganglia compared to prior scan.

Discussion

Chorea and/or Hemiballismus due to non-ketotic hyperglycemia make up 1% of movement disorder cases and have a prevalence of less than 1/100,000.[4] The pathophysiology of this rare presentation is still not fully understood, but is believed to affect the basal ganglia transiently. One frequently mentioned hypothesized mechanism is that uncontrolled, long-standing hyperglycemia causes hyper-viscosity of blood which can induce ischemia in the basal ganglia leading to decreased production of γ-aminobutyric acid (GABA) neurotransmitter in the central nervous system. GABA functions as an inhibitor of several pathways, including the dopamine pathway in the ventral tegmental area of the midbrain. With the disinhibition of GABA neurons, the dopaminergic activity is unopposed leading to hyperkinesia[5]. This has the potential to manifest as a movement disorder consisting of the involuntary, jerky, and dance-like movements that are associated with hemiballismus and the symptoms and severity vary among individuals. Non ketotic hyperglycemia can be associated with other neurological abnormalities like hemisensory loss, hemiparesis, hemianopia, seizures, delirium, aphasia, nystagmus and coma[6].

Most reported cases in the literature revealed typical radiographic changes and MRI appears to be the preferred imaging due to its sensitivity. The hallmark feature is the presence of hyperintense signals in basal ganglia, mostly in putamen and at times involving the head of the caudate nucleus in T1 weighted images with sparing of internal capsule and absence of mass effect . In majority of the cases, the lesions are in the contralateral side of the affected body but rarely bilateral lesions were also found[4].

Diabetic striatopathy associated chorea is well treatable and reversible by achieving optimal glycemic control alone. Symptomatic treatments may also be used to control hyperkinetic movements such as dopamine receptor blockers like antipsychotics preferably second generation due to low side effects, dopamine depleting agents like tetrabenazine, valbenazine, GABA antiepileptics like topiramate, valproate or benzodiazepines. Most cases have a favorable outcome depending on the prompt recognition of undiagnosed diabetes and achieving glycemic control[7].

This patient's hemiballismus symptoms resolved and the brain lesion in the basal ganglia improved significantly on a repeat MRI conducted on April 4th, 2022, indicating that timely diagnosis and effective management of diabetes helps to resolve the progression of neurological symptoms into hemiballismus. Once the diagnosis of Diabetes Mellitus has been made, appropriate treatment regimens should be implemented aiming to decrease blood glucose levels to reduce symptom progression. Haloperidol has been postulated to be effective for symptomatic management of hemiballismus in certain patient populations[8]. In more serious cases of hemiballismus, surgical interventions and brain stimulation could be considered as potential treatment options[9]. In this patient's case, a combination of Metformin, Semaglutide, insulin Lispro and Tetrabenazine proved to be effective.

Conclusion

The association between undiagnosed diabetes mellitus and the development of hemiballismus is rarely observed. Therefore, physicians should maintain a high degree of suspicion for Diabetes mellitus and perform diagnostic testing, including appropriate imaging studies, to narrow down the potential causes of hemiballismus-chorea. Early diagnosis and effective glycemic control play a crucial role in controlling debilitating neurological manifestations and preventing further disease progression.

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Difference of clinical significance and cost-effectiveness between multiple vs the limited number of times procalcitonin among ICU for bacterial sepsis.

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ABSTRACT

Procalcitonin (PCT) is a prohormone of calcitonin and in healthy individuals, PCT is produced in thyroid C cells, from a calcitonin gene-related peptide I (CALC-1) located on chromosome 11. The result of this transcription is an mRNA product known as preprocalcitonin. Preprocalcitonin is further cleaved into the 116-amino acid procalcitonin. The accumulated PCT is subsequently cleaved in the thyroid C cells to form calcitonin [1]. PCT is an intriguing biomarker for the early diagnosis of sepsis in critically ill patients. PCT has historically been used to make the diagnosis of sepsis and several studies have supported this notion, but others have argued that PCT should instead be used to rule out sepsis. [2] The problem with utilizing PCT is it's a low threshold for differentiating specific infections. PCT is unable to specify whether there is even a source of infection [3].

Our study will aim to determine if there is any difference in clinical significance and cost-effectiveness between multiple procalcitonin in patients over measuring it a limited number of times. If no difference is found between the two investigational protocols, which can guide strategies to reduce unnecessary testing, discomfort, and the financial burden on the patient, laboratories, and medical institutions.

Procalcitonin level measurement is widely used among patients admitted to the hospital, whether diagnosed with sepsis or not. The cost of the procalcitonin is 31-50 USD. The average cost of trending procalcitonin for bacterial sepsis treatment is approximately 500-600 USD versus limited measurements during hospitalization.

PCT is a great tool for guidance to sepsis, but there is minimal evidence on the role of PCT in guiding specific antibiotic treatment decisions [4]. PCT should be utilized initially to diagnose sepsis but should not be trended in patients as the usefulness of the test declines after the diagnosis of sepsis.

METHODS

A retrospective study observed 136 ICU patients with a primary diagnosis of sepsis using billing data who were admitted from April 2021 to March 2022. Unpaired t-tests were performed to determine differences between groups having 2 or fewer vs multiple (3 or more) procalcitonin checks during their hospitalization. Linear regression models were used to investigate the correlations between the number of procalcitonin checks and length of stay (Cost) and to calculate the slope and 95% confidence intervals. Statistical analysis was performed with GraphPad Prism software version 9.5.0. Statistical significance was set at $p < 0.05$.

RESULTS

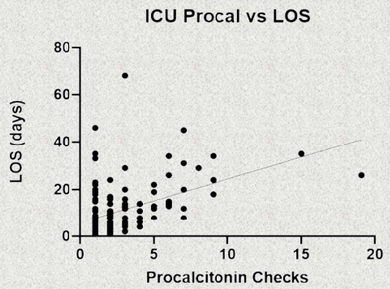

Fig 1: A significant correlation was revealed between the number of procalcitonin checks and direct cost in ICU patients (slope: 5253, p<0.0001, 95% CI: 3894-6612)

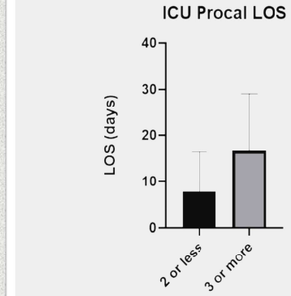

Fig 2: An unpaired t-test revealed a significant increase in LOS for ICU patients who had 3 or more procalcitonin checks (7.9 vs. 16.7 days, p<0.0001).

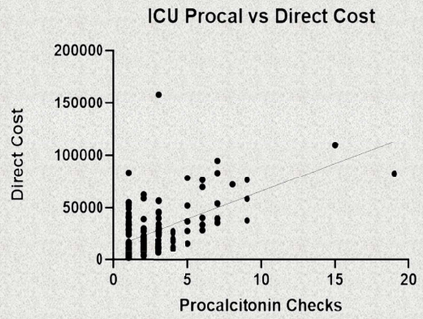

Fig 3: A significant correlation was revealed between the number of procalcitonin checks and direct cost in ICU patients (slope: 5253, p<0.0001, 95% CI: 3894-6612).

CONCLUSIONS

Patients staying in the ICU with a possible sepsis infection generally have PCT ordered. A positive correlation seems to be present between the length of stay in the ICU and the number of times procalcitonin was ordered. Patients with longer hospital stays tend to have PCT checked more often than those with shorter stays leading to an unnecessary cost on the medical system.

Procalcitonin is a tool that has stood the test of time when used correctly to diagnose sepsis patients, but this test has its limitations. The trend of PCT to ensure a patient is making a recovery from their previously septic state is an unnecessary use of resources since it likely does not change the treatment plan for the patient. More research needs to be done to assess the utility of PCT in the antibiotic decision-making process in septic patients. This may save patients from unnecessary expenses and reduce the burden of resources hospitals must provide for patients.

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Establishment of a Standard Protocol for HIET

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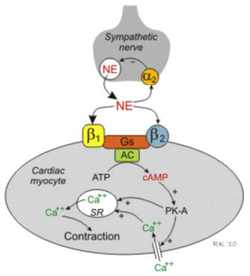
Abstract

Hyperinsulinemia-euglycemic therapy (HIET), is the cornerstone of beta blocker and calcium channel blocker toxicity. This therapy is not generally recognized by most physicians. The development of this Q.I. project was prompted by the multiple instances that uncovered the deficiencies within our system. The purpose of this clinical protocol was to ensure that important interventions and treatments are not missed. With this protocol in place, it will allow us to streamline care, improve patient outcomes, and reduce variability in practice. With the help of interdisciplinary staff, we were able to adopt a novel treatment plan and implement it into an entire health system.



Abbreviations: NE, norepinephrine; Gs, G-stimulatory protein; AC, adenylyl cyclase; PK-A, cAMP-dependent protein kinase; SR, sarcoplasmic reticulum

Figure 1 shows the Beta-1 receptors and their downstream effects on the calcium channels. **********.nuemblog.com/blog/beta-blocker-overdose (Source)

Background and Significance

- In the year 2020, approximately 2.1million telephone encounters were made to poison control for human poison exposures, and 39% of those calls were regarding adults categorized 20-90 years of age. The Poison control receives roughly 84,000 calls annually regarding cardiovascular medication poisoning in adults. To a great degree, cardiovascular drug overdose/exposure tend to be unintentional but the consequences, even after medical intervention, can be fatal. Specifically, beta-blockers and dihydropyridine calcium channel blockers are known to cause toxicity, even at subtherapeutic doses of these medications are consumed. In the year 2020, there were 18 deaths from B-blocker out of 10,994 overdose cases and 45 deaths from CCB out of 6,132 overdose cases, as documented on the National Poison Data System(NPDS.)
- Beta blockers treat a variety of diseases from angina and heart failure all the way to thyrotoxicosis and migraines. Although they are a commonly prescribed medication, proper dosing and management is required.
- The mechanism of action of this group of medication is to inhibit the sympathetic nervous system. Unstable vital signs, such as bradycardia, hypotension, and altered mentation are commonly observed as the initial clinical presentation in beta blocker overdose. For this reason, a high level of suspicion is required to acknowledge a B-blocker overdose, as the presenting symptoms may overlap an opioid overdose.

Mechanism of Toxicity

- Beta blockers exert their effects on the G-coupled proteins Beta-1 and Beta-2 receptors. These receptors, when innervated in a physiology state, allow for a calcium influx which leads to membrane depolarization of the cells. The Beta-1 receptors are mainly located in the heart, where as the Beta-2 receptors are located on the bronchioles and the arteries of the skeletal muscle. In the process of an overdose there will be a decrease in inotropy, chronotropy, and dromotropy of the cardiac cells. It will also impair insulin release, glycogenolysis, and renin release. Of note, Propranolol and Sotalol ingestion are the most lethal amongst all B-blockers.
- The calcium channel blockers exert their effects on the L-type Calcium Channels, which are located similarly in the heart, vascular smooth muscle and pancreas. Likewise, a CCB-overdose will lead to decreased cardiac contraction, cardiac conduction, and decreased insulin release. However, they also cause vasodilation.
- There are 2 types of calcium channel blockers: dihydropyridine and non-dihydropyridines. In the case of an overdose, the selectivity for their respective target sites are lost and thus all L-type calcium receptors are affected with the given calcium channel blocker.

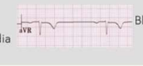
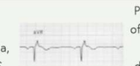
Beta-blocker (e.g. propranolol, labetalol)	Sinus bradycardia		Blockage of cardiac beta receptors
Ca2+ Channel Blocker (e.g. diltiazem, verapamil)	Sinus bradycardia, wide QRS		Prolongation of phase 0 of nodal action potential, slowing rate of depolarization and thus heart rate

Figure 2 shows ECG findings of B-Blocker and CC-Blocker toxicity, respectively. *******brownemblog.com/blog-1/2018/6/20/the-poor-mans-tox-screen (Source)

Hyperinsulinemia Euglycemic Therapy Antidote

- The effects of insulin are assumed to be multifactorial, as its exact role is not fully understood.
- The key function of insulin, in a pathological overdose, is to provide glucose to the stressed myocardium cells by activating and upregulating GLUT-4 receptors to the cell membrane. Insulin also reduces pyruvate to lactate, which further supports the energy demands within the cell.
- Insulin increases myocardial contractility via stimulation of phosphatidylinositol-3-kinase (PI3-K), resulting in reverse-mode sodium-calcium exchange. This allows for an increase in calcium concentration in the sarcoplasmic reticulum which leads to contraction of the cell.
- This antidote has been found to be more effective than vasopressors because it significantly improves contractility without increasing systemic vascular resistance. Raising SVR could decrease cardiac output further, making the antidote a preferable option.

General Management

- Initial approach involves maintaining airway, breathing, circulation and admitting the individual to the critical care unit. Intubation and central line placement maybe needed if the patient is expected to deteriorate.
- Activated charcoal should be administered if consumption is less than 2 hours from encounter.
- Bolus 2L of lactate ringers with bicarb, start Levophed and titrated to keep a MAP of >65mmhg.
- Order continuous telemetry monitoring and vitals. Order a drug screen, including screening levels for digoxin, acetaminophen, and salicylate. Order ABG, CBC, CMP, magnesium, phosphate, ionized calcium and a fingerstick glucose. All labs should be ordered hourly for the first 6 hours, except for glucose.
- If the heart rate is less than 50bpm, then 1mg of atropine should be pushed every 5 minutes; no more than 3milligrams should be administered in total. After, 1g of calcium chloride every 15 minutes can be provided, for a total of 3grams.
- Seizure prophylaxis orders should be in place with IV lorazepam 4mg, up to 3 times.
- Initiate HIET protocol.

Hyperinsulinemia Euglycemia Therapy Protocol

- Begin a IV Dextrose 20% infusion via central line, at 75 mL/hour D50W).
- Glucose levels should be monitored every 15 minutes until stable. After 4 consecutive glucose reads in the range of 150-250 mg/dL, glucose reads can be spaced out to every 30 minutes.
- Insulin, is initiated at the same time and administered 1 unit/kg IV bolus, followed by a 1 unit/kg/hour as an infusion.
- If the response is unsatisfactory, insulin may be up-titrated every 10-15 minutes within a range of 1-10 units/kg/hour. A reasonable hemodynamic target for efficacy might be a heart rate over greater than 50 bpm and systolic blood pressure greater than or equal to 90 mmhg.
- As time moves forward, we monitor electrolytes every 6 hours and the goal is to keep potassium greater than 3.0 mM. Replete magnesium & phosphate as insulin may promote hypomagnesemia and hypophosphatemia.
- HIET is often continued for 24-48hours, but depending on the toxicokinetic, it may be longer. Once heart rate and blood pressures begin to improve while vasopressors have been weaned off, you can begin to wean insulin requirements and it may be performed rapidly.
- After insulin has been discontinued, continuous monitoring is required for another 24hours as insulin-stacking may occur due to the large requirements provided.

Conclusions

- When assessing a patient in the emergency department with unstable vital signs and altered mental status, B-blocker and CC-blocker toxicity may not be the primary concern and may not be immediately considered.
- After initial evaluation, with the help of a proper history from family or EMT, it will become evident that the source of the patient's symptoms are due to medication toxicity. At this point, we should escalate the care of the individual to the critical care unit and prioritize airway, breathing, and circulation.
- Other initial measures include providing bolus doses of Atropine and Calcium Chloride, as outlined, to improve the heart rate in the short run.
- The initiation of high dose insulin infusion with dextrose is paramount to the patient's survival, as the therapy will be needed for possibly 24-48 hours-or longer, as it will counteract and reverse the effects on cardiac conduction and contractility of the cardiac myocytes.
- HIET has shown a favorable safety profile and is the recommended therapy to enhance survival in a patient experiencing B-Blocker/CC-Blocker toxicity.
- In the event that HIET is unsuccessful, ECMO can be used in refractory cases, though the likelihood of survival at this point is very low.

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Extracorporeal Membrane Oxygenation: A Unique Circuit

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Abstract

Extracorporeal membrane oxygenation (ECMO) is a life support system used in patients with severe cardiac and pulmonary failure that is potentially reversible but is resistant to traditional medical management. There are two major ECMO circuits utilized across various centers in the United States today, Veno-Arterial ECMO and Veno-Venous ECMO. Veno-Arterial ECMO is utilized to provide pulmonary and hemodynamic support , and Veno-Venous ECMO is used solely to provide respiratory support. We report a case of a 72-year-old man with severe mitral regurgitation, aortic stenosis, and biventricular failure who was placed on a unique ECMO configuration that consists of dual venous drainage (RA/PA) with femoral artery return which was achieved via PROTEK cannula.

Background

Patients with severe cardiac or pulmonary failure due to an underlying condition which is potentially reversible yet resistant to traditional medical management may benefit from extracorporeal membrane oxygenation (ECMO). ECMO is a powerful tool utilized in hospitals across the country to provide life support to adults and children that have life threatening cardiac or pulmonary conditions. ECMO utilizes a pump and an oxygenator to bypass the heart, lungs, or both [2]. It has two major circuit configurations, Veno-Arterial (VA) ECMO and Veno-Venous (VV) ECMO.

VA ECMO is indicated in patients who require cardiac and respiratory support [2]. Typically, in this circuit blood is drained from the venous system and sent to the “membrane” lung to undergo gas exchange. The newly oxygenated blood is then infused into the arterial system where it can perfuse the rest of the body [2].

VV ECMO acts to bypass the function of the lung. Lung function is compromised and thus, VV ECMO is responsible for bypassing the lung so the body may adequately oxygenate and remove carbon dioxide. In this circuit, blood is typically extracted from the venous circulation and transferred to the membrane lung, which is then subsequently returned to the right atrium[2].

We report the use of a unique hybrid ECMO circuit known as Veno-Pulmonary artery-Arterial (V-PA-A) ECMO. This configuration utilizes two venous ports, one in the right atrium and one in the pulmonary artery. Deoxygenated blood is pulled from the right heart and sent to the ECMO circuit where it is oxygenated and returned to the femoral artery. This circuit provides right ventricular support in the setting of severe right heart dysfunction. V PA A ECMO is rarely mentioned in the literature, and this makes its use noteworthy.

Case Presentation

We report a case of a 72-year-old male with a past medical history significant for Diabetes Mellitus, essential hypertension and hyperlipidemia who presented to the hospital as a transfer from a center post percutaneous coronary intervention to Right coronary artery and left circumflex artery.

Patient presented to the medical center following a syncopal episode at home. On initial presentation,

EKG was normal; however, patient was found to be hypotensive and bradycardic with agonal respirations and soon went into Pulseless electrical activity necessitating the need for cardiopulmonary resuscitation and intubation. Return of spontaneous circulation was eventually achieved. A repeat EKG revealed ST elevation changes and the patient was urgently taken to the Cath lab.

Post-procedure, the patient remained hypotensive and was initiated on vasopressor support and an intra-aortic balloon pump (IABP) was placed. The patient was then transferred to our facility for a higher level of care. Upon arrival, the patient was found to be in cardiogenic shock post myocardial infarction with an ejection fraction of 20-25% with anterior and apical wall akinesis. On the second day of hospitalization, the patient was placed on IMPELLA support given continued hemodynamic compromise. A transthoracic echocardiogram revealed severe aortic stenosis with an aortic valve area of 1 cm2, severe mitral regurgitation, and an ejection fraction of 30-35% with moderately depressed right ventricular failure and moderate tricuspid regurgitation.

Given the degree of aortic stenosis, the patient was planned to be taken up for a Transcatheter Aortic Valve Replacement (TAVR), however, he continued to decline hemodynamically and was not considered stable for the procedure. On the fourth day of hospitalization, the patient was initiated on Veno-Pulmonary arterial- Arterial (V-PA-A) ECO due to persistent decline and worsening right ventricular function. After stabilization of vitals, the patient was taken up for a TAVR procedure on the seventh day of hospitalization. As the hemodynamics improved, the RV function remained compromised thus the arterial cannula was explanted and the patient was transitioned to VV-ECMO for RV support using standard PROTEK configuration. The patient was finally explanted on day 12.

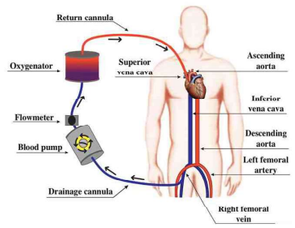

Figure 1. This diagram illustrates venous-venous ECMO. Blood is drained via cannula in the right femoral vein, it is then sent through the propulsion pump and oxygenator membrane where gas exchange occurs. The blood is then returned to the venous system via the right internal jugular vein [5].

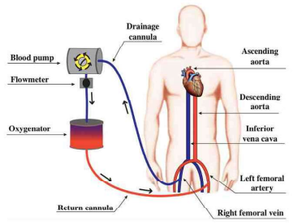

FIgure 2. This diagram illustrates venous-arterial ECMO. Blood is drained via cannula in the right femoral vein, it is then sent through the propulsion pump and oxygenator membrane where gas exchange occurs. The blood is then returned to the arterial system via the left femoral artery [5].

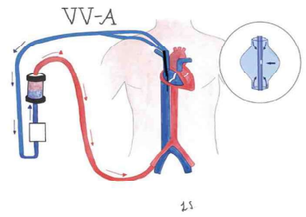

Figure 3. VV-A ECMO is demonstrated in this image. Dual cannulation of the right with return cannulation to the arterial system [6].

Discussion

ECMO is not a therapeutic intervention, it is a form of life support that is indicated in select patients. Apart from traditional VA and VV ECMO circuits, "Hybrid ECMO" circuits are becoming increasingly common in use. Over the years traditional ECMO circuits were found to be inadequate in the setting of secondary heart failure, differential hypoxia or worsening hypoxemia. In such instances, the need for additional third or fourth cannula was felt, hence, the Hybrid circuits came into being. These new circuits work by improving systemic oxygenation and offloading the heart, thereby, improving hemodynamics. (4)

In this case report, the patient had biventricular failure leading to refractory hypotension despite IABP support. The patient also had concomitant severe AS adding to the hemodynamic instability. The patient in this case was suffering from worsening hypotension due to right ventricular failure, while the left ventricular function was being bolstered with an Impella device. Due to the patient urgently requiring a trans aortic valve replacement (TAVR) secondary to severe aortic stenosis and concomitant severe mitral regurgitation the patient was initiated on V-PA-A ECMO. This ECMO circuit provided right heart support by draining a substantial portion of the right heart volume and returning it back to systemic circulation after gas exchange via the oxygenator. V-PA-A ECMO uses two drainage cannulas, one in the right atrium and the other in the pulmonary artery with the return cannula in the right femoral artery. This is akin to the V-AV hybrid circuit, however what makes V-PA-A unique is its drainage from the pulmonary artery, providing both preload and afterload reduction to the right ventricle. The aim of this circuit was to reduce the myocardial oxygen demand of the right heart, providing it ample time to heal. Drainage cannulation of the pulmonary artery effectively leads to the bypassing of the right side of the heart in the setting of refractory hypotension. It proved to be effective, the patient was stabilized and underwent TAVR procedure.

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Incidence of Triple Negative Breast Cancer in Louisiana

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Abstract

- Aside from skin cancer, breast cancer is the most common cancer in American women. 1 in 8 women will develop breast cancer during their lifetime.
- Tumors lacking hormone receptors are classified as triple negative breast cancer (TNBC) and are known to have a poor prognosis, shorter survival, and unresponsiveness to hormone therapy compared to other forms of breast cancer.
- TNBC represents 10%–20% of invasive breast cancers and has been associated with African-American race, socioeconomically deprived population, younger age at diagnosis (ages 40-50), more advanced disease stage, higher grade, high mitotic indices, BRCA1 mutation, and family history of breast cancer.
- The West South-Central Region of the United States (Texas, Louisiana, Oklahoma, and Mississippi) have the second highest incidence of TNBC in the United States.
- The etiology of TNBC remains largely unknown. There are few epidemiologic studies regarding TNBC.
- The primary aim of this study is to compare incidence of TNBC in Louisiana to a national population.

Methods

State and National level data was obtained from The Louisiana Tumor Registry (LTR). The LTR is a participant of the National Cancer Institute's Surveillance, epidemiology and End Results Program (SEER), and the Centers for Disease Control and Prevention's National Program of Cancer Registries (NPCR). Our study evaluated women in Louisiana diagnosed with TNBC from 2010-2019 of all ages. The population was subdivided by parish and age at time of diagnosis. Statistical analysis was performed with GraphPad and Prism. Bivariate comparisons were performed with chi-square analysis. P values ≤0.05 were considered significant.

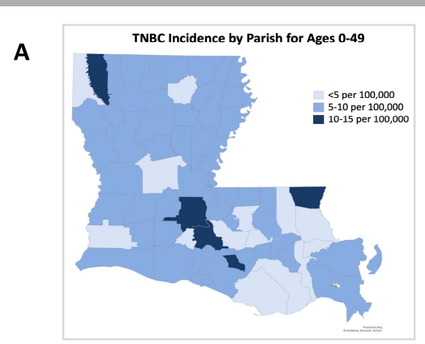


Figure 1. A. Incidence of TNBC per 100,000 people in the US, LA, and Caddo Parish ages 0-40 years.

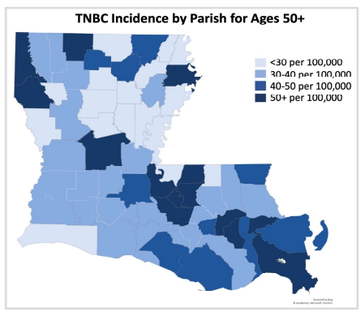


Figure 1. B. Incidence of TNBC per 100,000 people in the US, LA, and Caddo Parish ages 50 and older.

Results

- Louisiana has a significantly higher rate of TNBC than the rate of the United States overall.
- Caddo Parish has significantly lower rate of TNBC compared to Louisiana in ages 40-49.
- Caddo Parish has a significantly higher rate of TNBC in ages ≥50.
- Caddo Parish has significantly higher rates of TNBC in ages divided by in increments of 10 years (50-59, 60-69, and 70-79) compared to both LA and the United States.

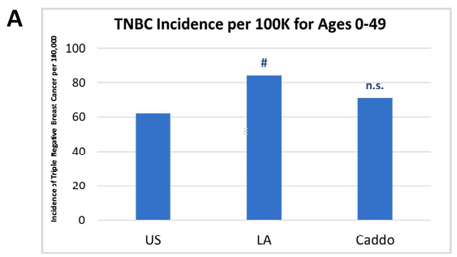


Figure 2. A. Incidence of TNBC per 100,000 people in the US, LA, and Caddo Parish ages 0-40 years

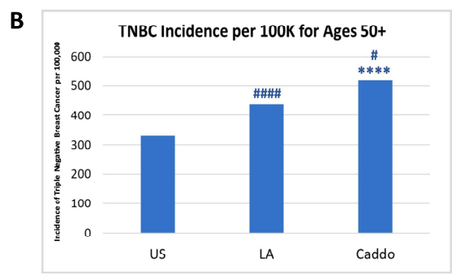
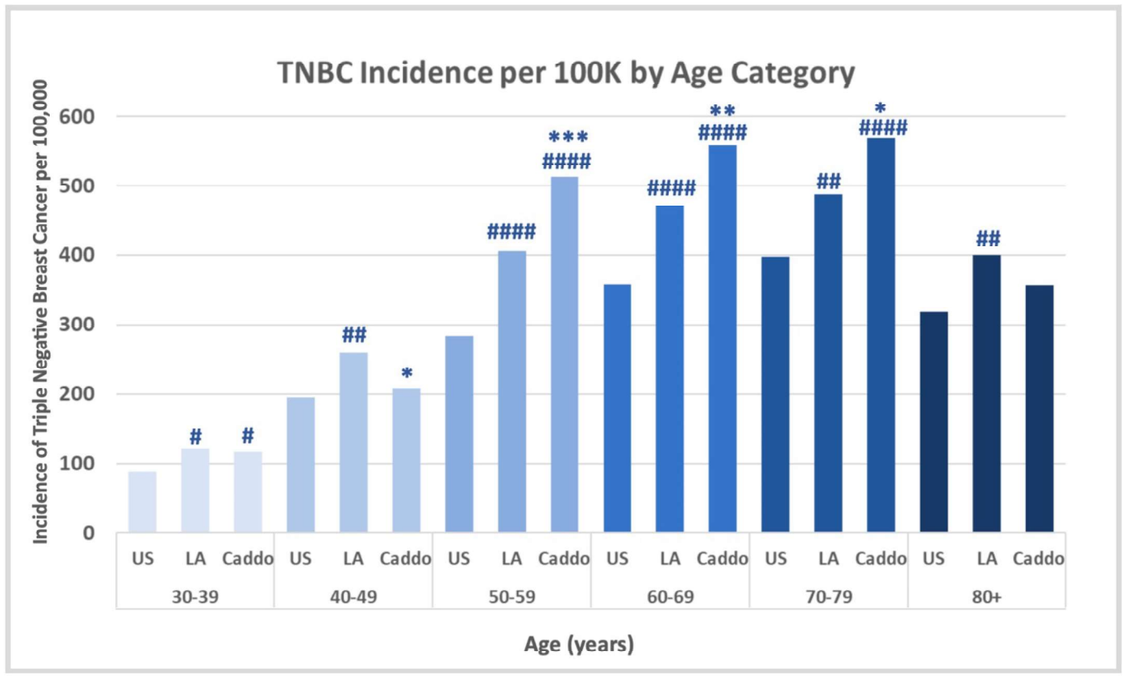


Figure 2. B. Incidence of TNBC per 100,000 people in the US, LA, and Caddo Parish ages 50 years and older.



#, P<0.05 compared to US; ##, P<0.01 compared to US; ###, P<0.001 compared to US; ####, P<0.0001 compared to US; *, P<0.05 compared to LA; **, P<0.01 compared to LA; ***, P<0.001 compared to LA; **** P<0.0001 compared to LA

Figure 3. Incidence of TNBC per 100,000 people in the US, LA, and Caddo Parish ages 3—39, ages 40-49, ages 50-59, ages 60-69, ages 70-79, and ages 80 and above.

Conclusion

- Louisiana and Caddo Parish has significantly increased incidence of triple negative breast cancer comparative to the nation in women ages 50 -79 years.
- Further studies should be done to identify potential factors evaluating ethnicity and modifiable comorbid conditions including obesity.
- We plan to replicate this study with estrogen/progesterone positive invasive ductal carcinoma and Her-2 positive invasive carcinoma.

Acknowledgements

This project would not have been possible without the help of Mrs. Lauren Maniscalco and Mr. James W. Kinchen who are integral in data acquisition through the Louisiana Tumor Registry.

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Lead Toxicity From A Retained Bullet

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Introduction

The full extent of adult lead poisoning and toxicity is difficult to ascertain because of limited data; existing data and research findings suggest that it remains an important environmental and public health problem even if population levels are decreasing. The prevalence of elevated lead levels is decreasing in the United States . The consequences of lead exposure may be reduced by taking an occupational and environmental health history, recognizing the early symptoms of elevated blood lead levels (BLLs) and lead poisoning, having a low threshold for suspecting asymptomatic lead exposure based on an occupational and environmental history or medical findings, and checking BLL in such cases to verify the diagnosis and provide appropriate advice and treatment. Here we discuss about an unusual case of lead toxicity.

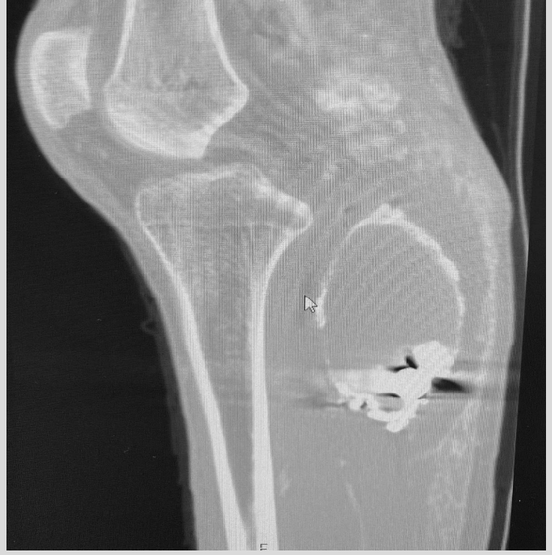
Case Presentation

A 19-year-old Hispanic male presented to emergency department with symptoms worsening abdominal pain, anorexia, weight loss (10 lbs over 2 months), constipation, low back pain, right knee pain and headache that has been going on for the past two weeks. Complete blood counts showed microcytic anemia with peripheral smear showing basophilic stippling; Computerized tomography of head, abdomen and pelvis showed no acute findings. Iron profile- normal limits. Upon careful history and examination, he revealed that he had suffered an accidental gunshot injury to his right knee 6 years ago with retained bullet and had undergone a popliteal artery repair. His knee ray showed retained bullet fragment encased in chronic calcified hematoma. This led us to suspect lead poisoning and ordering of venous lead level. His blood lead level came back and was elevated to toxic level of **136.2 mcg/dl (Normal <5.0 mcg/dl) .**

The patient was taken to the operation theatre for bullet extraction, and the hematoma evacuated showed that the inside of the capsule had blackish-grey discoloration possibly from lead. Simultaneously the patient was started on the chelating agent, succimer. The patient's symptoms gradually improved and were at baseline with no active complaints. He was followed as an outpatient and lead levels were noted to be down trending. He continues to be followed with monthly checks of his blood lead levels.

Laboratory	Value
WBC	4.7 10 E3/uL
RBC	3.06 10 E3/uL
Hb	7.5 g/dL
Hct	22.6 %
MCV	73.8 fL
RDW	18.2%
Plt	304 K/uL
Retic	4.9 %
Peripheral Smear	Polychromasia 2+
	Basophilic Stipling 1+
	Microcytes 1+
Venous Blood Level	132 mcg/dL
AST	64 U/L
ALT	50 U/L
Cr	0.5 mg/dL
UDS	THC+
Parvovirus IgG / IgM	Positive / Negative

Fig.1 . All the lab abnormalities noted in the patient



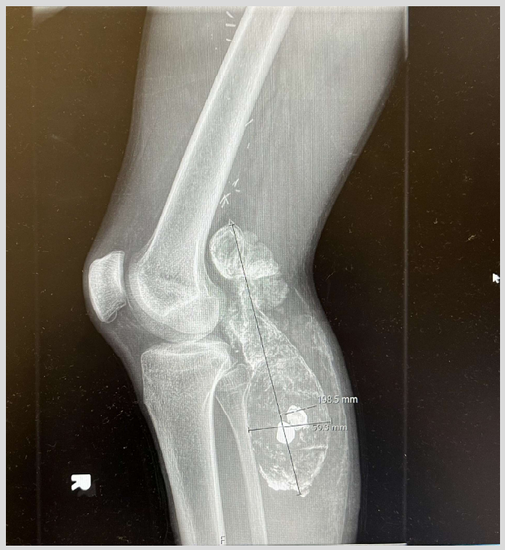


Fig.2&3. X-ray and CT knee of the patient showed retained bullet fragments encased by a chronic fibrous hematoma capsule

Discussion

In lead poisoning, symptoms are most likely to occur in adults with blood lead levels (BLL) >80 mcg/dL. With BLL 40 to 80 mcg/dL, the symptoms are less severe and are variable. Adults with BLL <40 mcg/dL are usually asymptomatic and lead toxicity should be diagnosis of exclusion. While acute intoxication leads to gastrointestinal, musculoskeletal, neuropsychiatric, and hematological effects, chronic exposure is linked to increased risks of mortality from oncological and cardiovascular causes. Because lead poisoning often presents with nonspecific symptoms and signs, the diagnosis must be suspected based on exposure, occupational history, and other associated symptoms. BLL should be obtained as this forms the basis upon which management and decisions are made. Chelation therapy is suggested for patients with a BLL >80 mcg/dL and for all patients with a BLL > 100 mcg/dL. At a minimum, for patients with BLL <10 mcg/dL, surveillance with repeat BLL testing should be done at least annually if lead exposure continues. For BLL 10 to 29 mcg/dL, a repeat BLL should be obtained every three months until BLL is reduced to <10 mcg/dL. For BLL >30 mcg/dL, BLL should be repeated every month.

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Literature Review and Case Report: A Rare Case of Chromoblastomycosis in a Transplant Patient Requiring Resection and Skin Graft

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Abstract

Chromoblastomycosis is a chronic fungal infection found mainly in tropical and subtropical regions of the world. Melanized fungal spores can inoculate cutaneously from contaminated plant matter found in the soil, thorns, and wood splinters into open wounds. Verrucous, cauliflower-like lesions manifest on the skin and can progress with further serious complications if not adequately treated, especially in immunocompromised patients. Recognized as a neglected tropical disease, chromoblastomycosis is rarely found in the United States and is important to keep on the differential diagnosis in immunocompromised patients due to higher susceptibility and the possibility of severe progression.

In this case report, we present an immunosuppressed patient with a history of kidney-pancreas transplantation revealing a severe fungal infection of the right forearm that presented after being scratched by his dog. A biopsy performed by his dermatologist showing melanized spores and pseudoepitheliomatous epidermal hyperplasia confirmed the diagnosis of chromoblastomycosis and the patient was subsequently treated with an extended course of antifungal medications. The fungal infection, however, remained refractory to treatment and continued to progress. The patient was admitted for hyperkalemia found at a routine transplant clinic visit and the worsening fungal skin infection was observed upon examination, prompting a general surgery consultation for further evaluation and intervention. The right forearm lesion was examined by general surgery and a skin resection with split-thickness skin graft (STSG) was promptly scheduled. The surgery proved to be successful and repeat wound cultures showed no fungal growth. The patient was discharged once stable and cleared by general surgery, the transplant team, infectious disease, and nephrology. Successful healing of the skin graft was reported at the patient's two week postoperative clinic follow-up visit.

This report features a unique and rare case of chromoblastomycosis in an immunocompromised transplant patient that remained unresponsive to treatment warranting resection and skin graft.

Introduction

Immunocompromised patients, such as transplant patients, are known to be highly susceptible to developing bacterial, viral, and fungal infections. Cutaneous fungal infections, specifically secondary to melanized fungi, are rising in this population of patients and may indicate fatal dissemination[1]. These occurrences are becoming a topic of concern in medical mycology, therefore placing these infections on the differential diagnosis of chronic skin lesions in immunocompromised patients and demonstrating the importance of early recognition and treatment[2].

Chromoblastomycosis, a rare and neglected tropical disease, is a chronic cutaneous fungal infection caused by the inoculation of melanized fungal spores belonging to the order *Chaetothyriales* and family *Herpotrichiellaceae*. Although it is rarely observed in the United States, chromoblastomycosis is prevalent in impoverished populations from rural areas and is found predominantly in humid tropical and subtropical regions such as Latin America, the Caribbean, Africa, Asia, and Australia, with Madagascar leading in number of cases[3]. Patients acquire this infection by traumatic implantation of contaminated plant material from wood splinters, thorns, or soil into an open wound, with most cases being reported in young male occupational workers and farmers from developing countries[4]. Etiology is determined by analysis of sclerotic cells, also known as medlar bodies or copper pennies, under direct examination with KOH preparation or by biopsy stained with hematoxylin and eosin. These sclerotic cells are specific to chromoblastomycosis and are found in the infected plant matter. Results can then be confirmed by culture which displays the isolated fungi[5,6].

Case Presentation

A 61 year old male with a past medical history significant of End Stage Renal Disease, Cytomegalovirus, Diabetes Mellitus, Hypertension, and Hyperlipidemia status-post kidney-pancreas transplant in 2020 presented to Willis-Knighton Medical Center after a potassium level of 6.6 resulted at a routine transplant clinic visit. While receiving treatment in the hospital, the patient revealed a fungal skin infection of the right forearm that developed approximately in July 2020 after reportedly being scratched by his dog. He was seen by his dermatologist in his hometown for the lesion which was biopsied on 08/08/2022 and determined to be positive for the fungal organism, chromoblastomycosis. The patient was then subsequently started on an extended course of Diflucan (fluconazole) 300 mg twice per day and Sporanox (itraconazole) 100 mg twice per day by his hometown dermatologist. Despite treatment with these antifungal medications, the wound continued to progress and remained refractory to therapy. Upon admission, his immunosuppression medications were minimized, and CellCept (mycophenolate mofetil) was discontinued by the transplant team in an effort to improve treatment response of the lesion. General Surgery was then consulted for resection on 10/31/2022 after the lesion continued to progress despite all medical management. A staged excision was planned with subsequent split-thickness skin graft (STSG)

The patient's daily home medications include amlodipine, aspirin, gabapentin, mycophenolate mofetil, prednisone, tacrolimus, valganciclovir, fluconazole, itraconazole, and ropinirole. Upon admission, vital signs included a temperature of 97.9 F, heart rate of 69 beats per minute, respiratory rate of 19 breaths per minute, blood pressure of 128/65, and oxygen saturation of 95% on room air. Physical exam findings of the right upper extremity were positive for fungal lesions including a 9 cm x 7 cm lesion and 1 cm x 1 cm lesion on the lower forearm with purulence and oozing blood present as shown in Figure 1 and Figure 2. Radial pulses were 2+ bilaterally with no cyanosis or edema of the extremities. Right hand motor and sensation were normal. Laboratory workup included a white blood cell count of 3.4, hemoglobin of 11.5, hematocrit of 34.1, platelet count of 182, sodium of 136, potassium of 5, BUN of 22, creatinine of 1.46, albumin of 3.7, Tacrolimus level of 8.5.

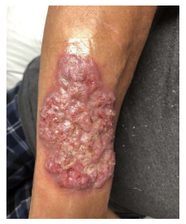

Figure 1.

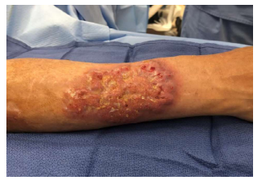

Figure 2.

The patient was taken to the operating room on for wide local excision of the right forearm lesions. At the time of the surgery, lesion one was found to be 11.5 cm x 9.5 cm and lesion two was found to be 4 cm x 1.5 cm. The smaller lesion was closed primarily with 3-0 PDS. A full thickness skin excision was carried down to the right forearm investing fascia shown in Figure 3 and Figure 4. A wound vac was then applied to the right forearm wound. Pathology after the resection was negative for neoplasia in either specimen. The report on initial resection showed a gram-positive branching filamentous organism that was possible Nocardia. Repeat wound culture on one week later showed a final result of no fungal growth at four weeks.

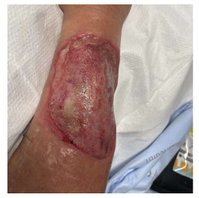

Figure 3.

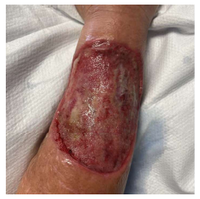

Figure 4.

The patient returned to the operating room on 3 weeks later for a split thickness skin grafting of the right upper extremity wound with the donor site for the skin graft being the right anterior thigh. The right upper extremity wound was measured to be 10.5 cm by 8 cm and a 12 cm strip of skin graft from the right anterior thigh. Successful skin grafting of the wound shown in Figure 5 and Figure 6. A wound vac was then placed to secure the skin graft in position.

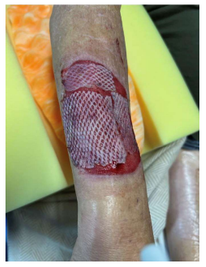

Figure 5.

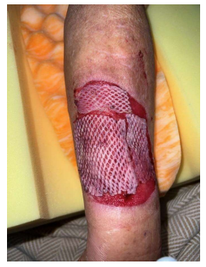

Figure 6.

The wound vac was removed 4 days later and the patient was discharged on on itraconazole and minocycline with plans to receive further wound care from Home Health. The patient was then instructed to follow-up with general surgery, infectious disease, and the transplant team for monitoring and continuation of care. Adequate wound healing was observed at the patient's two week post-operative clinic follow up visit shown in Figure 7 and Figure 8.

Figure 7.

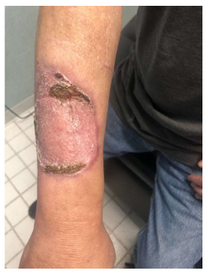

Figure 8.

Discussion

Chromoblastomycosis is a common chronic fungal infection found mainly in the tropical and subtropical regions of the world, but rarely observed in the United States with data suggesting an incidence of 1:8,625,000 patients reported from several cases[8]. Studies have shown that inoculation of this fungus most frequently occurs due to transmission into an open wound when contacted by infected plant material or soil, and is most commonly found in male farmers, occupational workers, gardeners, and other agricultural laborers without protective clothing and footwear. If inadequately treated, further complications can include secondary bacterial infections, ulcerations, lymphedema, ankylosis, and elephantiasis[2]. Although extremely rare, several cases report malignant transformation of chronic chromoblastomycosis into squamous cell carcinoma[9]. Our patient represents another rare case of chromoblastomycosis found in the United States which was mostly likely transmitted into the open wound of his right forearm after reportedly being scratched by his dog.

Skin manifestations of chromoblastomycosis can range from small, nodular lesions to large papillary, cauliflower-like lesions that most commonly present on the lower extremities of infected patients. Pathomorphology of lesions frequently reveal hyperkeratosis and pseudoepitheliomatous hyperplasia[2]. These findings are consistent with our patient's shave biopsy results of the skin lesion which also reveal pseudoepitheliomatous epidermal hyperplasia. Although the lesion in this case report presented in a more uncommon location of the forearm, it remained entirely cutaneous which is a finding consistent with published data from various authors[10,11,12,13].

The patient's susceptibility to chromoblastomycosis was most likely enhanced due to his past medical history of multiple comorbidities including DM, CMV, ESRD, and renal transplantation in combination of treatment with multiple immunosuppressive medications including Tacrolimus, CellCept (mycophenolic acid), and prednisone. This association is described in a study by Santos et al. (2017) which reported that out of 56 patients with melanized fungal infections, 22.4% had a history of diabetes mellitus, 20.6% with a history of cytomegalovirus, and 10.3% with a history of chronic viral hepatitis. This case study also reported that all of their patients were on regimens of immunosuppressive drugs at the time of diagnosis with a melanized fungal infection including 100% taking prednisone, 94.8% taking calcineurin inhibitors like Tacrolimus, and CellCept. All cases of chromoblastomycosis in this case study were successfully treated with antifungal medications without surgical intervention, unlike our patient whose lesions remained refractory to antifungal medications, further warranting surgical resection and skin graft. This inadequate response to treatment may also have been due to the patient's past medical history of multiple comorbidities, kidney-pancreas transplantation, and immunosuppressive medications.

Conclusion

This patient case represents why early diagnosis of this fungal infection and achievement of effective medical management is important to prevent further progression and subsequent surgical intervention. Although still extremely rare in the United States, chromoblastomycosis should remain on the differential diagnosis of cutaneous fungal infections, especially in immunocompromised patients who may be more susceptible to dissemination and warrant surgical intervention for successful cure.

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Lymphatic Pump with Mesenteric Lift Augments Constipation Standards of Care in a Patient with Limited Mobility

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Abstract:

Constipation is a common side effect of surgical procedures involving the abdominal cavity. Constipation occurs when there is reduced mobility of gastric contents through the large intestine and is observed clinically when bowel movement frequency significantly decreases over time, often resulting in patients going multiple days without bowel movements. The leading risk factors for constipation development are secondary to systemic illness, opioid use, limited fluid or fiber intake, chronic hospitalization, decreased physical mobility, or physical deconditioning. While there are effective, low-cost therapies used to treat constipation, such as laxatives and enemas, prolonged laxative use can increase risk of future constipation development through the patient becoming functionally dependent upon laxatives for producing a successful bowel movement. Likewise, recurring enema use can disrupt the naturally occurring gut microbiota of the intestines, predisposing affected patients to secondary intestinal conditions, such as diarrhea. As such, additional therapeutic strategies are needed to optimize constipation patient outcomes. Osteopathic manipulative therapies (OMT) are one type of low-cost, non-invasive approaches used to augment the efficacy of standards of care for constipation patients from diverse etiologies.

Here, we described the case of a middle-aged, post-menopausal Caucasian female experiencing constipation secondary to ileocecectomy, opioid pain management, and physical deconditioning with co-morbid medical history of angina, breast cancer, coronary artery disease, hypertension, hyperlipidemia, chronic obstructive pulmonary disease (COPD), and endometriosis. The OMT technique of Lymphatic Pump with Mesenteric Lift was used alongside laxative therapies to restore optimal fluid balance within, blood flow to, and lymphatic drainage from the patient's large intestines. Prior to OMT, the patient had no bowel movements for 4 days and the patient returned to daily bowel movements by day 2 post-OMT. This OMT approach was well-tolerated by the patient. Given this approach is often well-tolerated by patients of diverse etiologies, has few contraindications, and is both low-cost and non-invasive, more research is needed to establish the clinical utility of Lymphatic Pump with Mesenteric Lift as a treatment option for constipation. Additional research would particularly be useful in determining this technique's utility for reducing the frequency of adverse outcomes in constipation patients, minimizing length of stay for affected patients, and identifying contraindications for this OMT that are not currently specified.

Case Presentation:

Chief complaint: Rectal Bleeding

HPI: Patient is a 63-year-old Caucasian female who presented to the emergency room with chief complaint of acute onset rectal bleeding, generalized muscle weakness, and hypotension for one week duration

Past medical history: angina, breast cancer, coronary artery disease, hypertension, hyperlipidemia, chronic obstructive pulmonary disease (COPD), and endometriosis

Past surgical history: tonsillectomy, percutaneous transluminal cutaneous angioplasty (PTCA), bilateral mammoplasty with augmentation, bilateral mastectomy, and exploratory laparotomy

Home medications: Atorvastatin, Wellbutrin SR, Cetirizine, Premarin, Ezetimibe, Advair, Lisinopril, Effient, Spiriva, Azelastine-fluticasone

Family History, Social History, & Allergies: Non-contributory

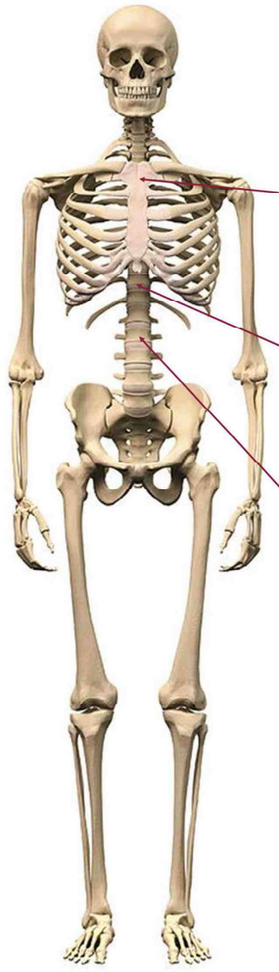
ROS: dyspnea, rectal bleeding secondary to antiplatelet use for prior coronary stent placement and colon polyp resection, generalized musculoskeletal weakness

Physical exam: pale-appearing, cooperative, comfortable, well-kept, well-developed patient who was awake, and oriented to person, place, and time. The rectal exam was positive for gross and occult blood. Gait, balance, posture, and coordination were unable to be assessed.

Vitals: WNL, except for low BP of 81/49

Lab values: CBC: HCT of 25.7; Hgb of 8.7; CMP: Ca of 7.5; EKG: NSR with incomplete RBBB

Hospital course: the patient received one unit of blood and calcium replacement. The patient started experiencing severe right-sided abdominal pain out of proportion to physical exam with involuntary guarding to the affected area with rebound pain elicited by moderate depth palpation with accompanying tachycardia, and later developed hemorrhagic shock secondary to acute anemia due to GI bleed. CT results indicated active extravasation of blood from the cecum, and a central venous line was placed to assist with fluid resuscitation. The patient was taken to the operating room for robot-assisted ileocecectomy, which the patient tolerated without complications. The patient returned to the SICU sedated with Propofol and Precedex and on ventilator support and was slowly weaned to room air over the next three days, and a left lateral Jackson-Pratt (JP) post-op drain was present with approximately 440 mL of drainage per day. The patient regained consciousness and was gradually returned to room air by post-op day 4. At this time, the patient's pain control was switched back from Dilaudid to Morphine due to significant blood pressure decreases associated with Dilaudid administration. In the following days, the patient did not have a bowel movement for 4 days and gradually developed generalized abdominal pain with hypoactive bowel sounds heard in all 4 abdominal quadrants. Starting on post-op day 4, daily laxatives, stool softeners, and fiber supplements were provided to the patient during this period without improvement in her condition.



Pre-OMT Osteopathic Structural Exam

Thoracic Outlet Release

Technique: Apply about 5 pounds of inferior palpatory force to the superior aspect of right shoulder musculature for 1-2 seconds. Repeat on Left shoulder and repeat this process 5 additional times.

Purpose: to passively engage the patient's sternoclavicular joints bilaterally to optimize patency of the thoracic duct at its insertion to the vena cava.

Diaphragm Doming

Technique: palpate 1-2 inches inferior to the inferior margin of patient's ribcage bilaterally. then change the palpation force trajectory to a superior and posterior direction to engage the diaphragm musculature. During inhalation, initial palpation pressure was maintained against the respiratory diaphragm, and increased by approximately 5 pounds of force bilaterally during the next inhalation phase. This process was repeated twice while maintaining the increase in palpation force.

Purpose: to passively engage the patient's thoracoabdominal diaphragm to optimize the patency of the aortic foramen through which both the descending aorta passes to provide blood supply to the mesentery and lower extremities, as well as to optimize the patency of the thoracic duct as it passes through the aortic foramen returning lymphatic drainage to central venous circulation through the vena cava.

Mesenteric Lift

Technique: Apply moderate depth palpation midline 1" superior to the umbilicus to engage the IMA. Maintain palpation and apply inferior traction with left lateral traction to engage the sigmoid colon, then hold for 30 seconds. Repeat this process with left lateral traction only for engaging the descending colon. Repeat starting 2" superior to umbilicus to engage the SMA, then apply superior traction to engage the traverse colon. Repeat from the same SMA starting point with right lateral traction to engage the ascending colon. Return passively the body habitus to neutral.

Purpose: to passively engage the colonic tissue in reverse anatomic order to restore optimal blood flow to, lymphatic drainage from, and gastric content motility through the large intestine.

Post-OMT Osteopathic Structural Exam

Osteopathic Structural Exam Components Completely Assessed:

		Palpation Parameters				Severity				Comments
		T	A	R	T	0	1	2	3	
Head/Face	Pre-OMT	•	•	•	•		X			Mild BL frontal & maxillary sinus tenderness to percussion or percussion
	Post-OMT	•	•	•	•		X			BL Sinus Effleurage with Galbreath Maneuver deferred for outpatient care should sinus tenderness persist
Pelvis	Pre-OMT	↑	↑	•	↑		X			ALS tender point on right; Increased tissue warmth & bogginess near right ASIS Negative compression test BL; no pelvic outflare or inflare; no pubic shear; no pelvic shear; no anteriorly or posteriorly rotated pelvis BL
	Post-OMT	↑	↑	•	↑		X			Standing flexion test and ALS tender point treatment deferred due to patient's physical deconditioning
Abdomen	Pre-OMT	↑	•	↑	↑				X	Tense abdomen throughout all 4 quadrants; hypoactive bowel sounds heard; patient passing flatus; 5/10 poorly localized achy non-radiating pain aggravated with abdominal flexion
	Post-OMT	•	•	•	•	X				Soft abdomen throughout all 4 quadrants; normoactive bowel sounds heard; patient passing flatus; patient described 0/10 pain
Diaphragm	Pre-OMT	•	↑	↓	↑			X		Thoracic outlet restricted on left; thoracoabdominal diaphragm tissue hypertense BL
	Post-OMT	•	•	•	↑		X			Thoracic outlet WNL BL; thoracoabdominal diaphragm tissue hypertense BL

Osteopathic Structural Exam Components Limited by Patient's Physical Deconditioning:

	Palpation Parameters				Severity				Comments
	T	A	R	T	0	1	2	3	
Cervical Vertebrae									Deferred due to patient's physical deconditioning
Thoracic Vertebrae									Deferred due to patient's physical deconditioning
Lumbar Vertebrae									Deferred due to patient's physical deconditioning
Sacrum									Deferred due to patient's physical deconditioning
Ribs	•	•	•	•	x				Limited to anterior approach only due to patient's physical deconditioning Symmetrical motion during inhalation and exhalation, no fractures, tender points, or crepitus
Extremities	•	•	↓	•		x			Limited to anterior approach only due to patient's physical deconditioning Full ROM throughout upper and lower extremities BL; 3/5 strength throughout upper and lower extremities BL; No leg length discrepancy observed

Limitations:

- The information presented in this case report represents the clinical care of a single patient, and thus the current generalizability of these findings to patient populations from diverse demographics is limited
- The patient is not currently being followed longitudinally to document delayed-onset or long-term adverse effects of this intervention
- The effects on constipation of treating the AL5 tender point superior to the right pubic tubercle (with FS_aR_a Counterstrain), BL Sinus Effluerage with Galbreath Maneuver, and Standing Flexion Test assessment were deferred to outpatient care considerations
- The effects on constipation of diagnosing and treating vertebral segment somatic dysfunctions were deferred to outpatient care considerations
- No novel adverse effects or contraindications were documented in this case

Conclusions:

- More research is needed to characterize the utility of this OMT approach in patients suffering from prolonged constipation, as well as whether there are any differences in post-OMT time to first bowel movement by demographic variables, such as sex differences, gender differences, differences by patient BMI, or differences by ethnicity[1,2]
- More research is needed to determine whether this OMT approach impacts clinical outcomes in pre-menopausal versus post-menopausal women[3]
- More research is needed to determine whether there are differential outcomes (such as difference in average duration to first post-OMT bowel movement; average hospital length of stay) by constipation etiology (such as surgical versus non-surgical)[4-8]
- More research is needed to determine whether this OMT approach impacts long-term adverse outcomes in constipation patients such as average frequency of intestinal perforation, opioid dependence, or laxative dependence versus established standards of care

Acknowledgements:

This case study was made possible through each of the VCOM-LA PPCOMM faculty training me to optimize patient care outcomes by integrating hands-on modalities into patient care plans when appropriate. Dr. Stephanie Aldret and Dr. Jason Sneed also reviewed the treatment protocol for clinical utility and provided constructive feedback. Dr. Anand Desai generously allowed me to demonstrate this combination of OMT to assist the patient described here during my OMSIII IM1 rotation. The patient generously consented to presenting their clinical care information.

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Mast Cell Degranulation and its Contribution to Chronic Pain in HIV Patients

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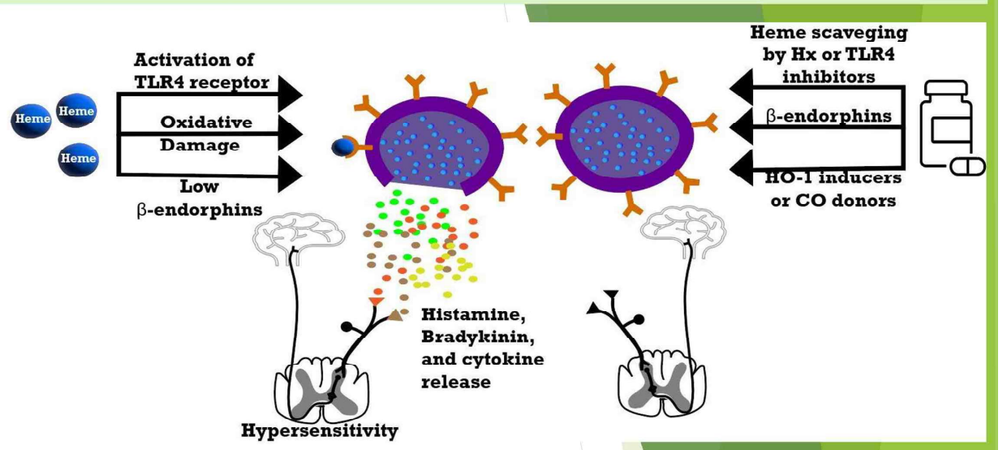
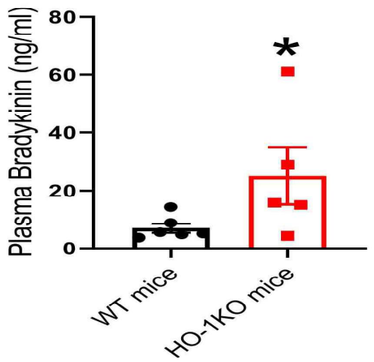
Background

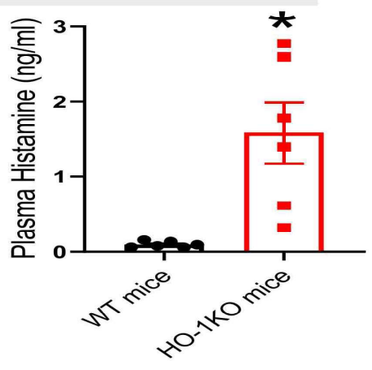
- Chronic widespread pain (CWP) in HIV-1 patients ∝ high rate of disability & low quality of life, *despite* HAART causing low viral load & adequate CD4 count.
- Specific mechanisms of CWP in HIV not understood.
- Activation & degranulation of mast cells + release of histamine, bradykinin, and other cytokines from peripheral immune cells → hypersensitivity rxn.
  - Past lab findings → more hemolysis and plasma levels of cell-free heme, less in heme degrading enzyme (heme oxygenase 1 (HO-1)) levels, & more pain sensitivity in hemolysis animal model (associated with cell-free heme).
- GOAL: examine role of HO-1 in release of histamine, bradykinin, & other cytokines from immune cells.

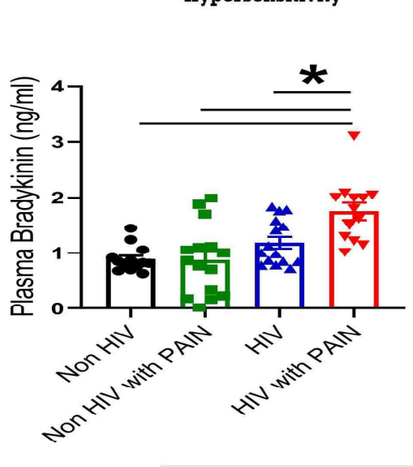


Methods

- 4 data sets.
  - First 2 sets: bradykinin and histamine levels in human subjects.
  - Other 2 sets: bradykinin and histamine levels in mice that lack HO-1.
- Determine whether mice are hypersensitive to mechanical stimulation using Von Frey.







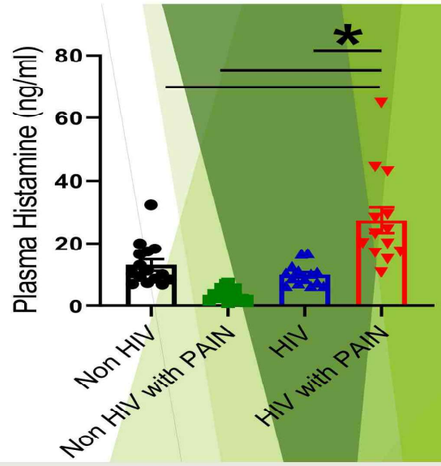
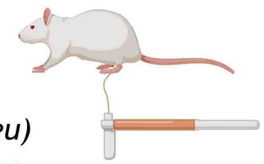


Figure 1.
Demonstration of Von Frey
(Photo Credit: Lani Tieu)



Results

- PWH with CWP = higher plasma levels of histamine and bradykinin.
- Data in rodents → HO-1 knockout mice have reduced paw withdrawal threshold to mechanical stimulation compared to the wild type mice
  - Correlates with high plasma levels of histamine and bradykinin in these animals.

Discussion

- High cell-free heme and low HO-1 ∝ more mast cell degranulation and higher histamine and bradykinin in humans and animals → contribution towards pain in HIV.
- Future studies will focus on determining strategies to stabilize mast cell membrane in HIV and reduce hypersensitivity.

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Chronic widespread pain. Encyclopedia of Pain.:391-391. doi:10.1007/978-3-540-29805-2_723

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THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Mentorship Needs of Medical Students Interested in Cardiothoracic Surgery: A Need for Female Mentorship is on the Rise

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Willis-Knighton Health System,[1] Arkansas College of Osteopathic Medicine[2], Oregon Health and Science University[3], The Ohio State University[4], University of Minnesota[5], University of California San Francisco[6]

Abstract

Objective:
Cardiothoracic (CT) surgery has historically been ranked as one of the least racially and gender diverse fields. Recently, there have been efforts in CT surgery to try to help diversify its trainees. A key element of this includes recruiting and mentoring underrepresented students. The goal of this study was to evaluate the mentorship needs of students pursuing CT surgery in the US and to identify areas for further improvement.

Methods:
The Thoracic Surgery Medical Student Association distributed an anonymous online survey to medical students interested in CT surgery via social media and their membership list. Descriptive analyses were performed using percentages.

Results:
There were 79 unique survey responses. 69/79 (87%) specified preferences for certain mentor demographics: 24 (30%) respondents preferred female mentors, 10 (13%) preferred DOs, 5 (6%) preferred Black mentors, 5 (6%) preferred Hispanic/Latino mentors, and 2 (3%) preferred LGBTQ mentors. The most common topics students were seeking guidance for included research (29%), career advice (25%), and networking (24%). They were also interested in discussing the residency application process, specifically how to choose the best residency program (78%), as well as understanding what to do if one does not match into an integrated program (45%). Others were seeking advice about preclinical topics such as how to become involved within the specialty during preclinical years of medical school (42%), and how to choose between cardiac and thoracic surgery (32%).

Conclusion:
Our survey results demonstrate that prospective CT surgery applicants desire mentors who come from diverse backgrounds. Given the increasing diversity of the field's patient population within the context of our country's changing social landscapes, it becomes increasingly necessary for our surgeons to represent and identify with patients and mentees. For example, while 30% of prospective CT surgery applicants desire female mentors according to our survey, only 17% of current academic cardiothoracic surgeons are female. A discordance between mentorship needs and representation signifies a gap in access to mentorship that could be essential to diversifying our workforce. Additionally, our survey offers further insight on how to guide prospective CT surgery trainees. Further studies evaluating the impact of existing diversity and inclusion programs can help further understand the importance of representation and visibility of mentors within CT surgery and its impacts on trainees' perceptions of inclusivity and support for long-term success.

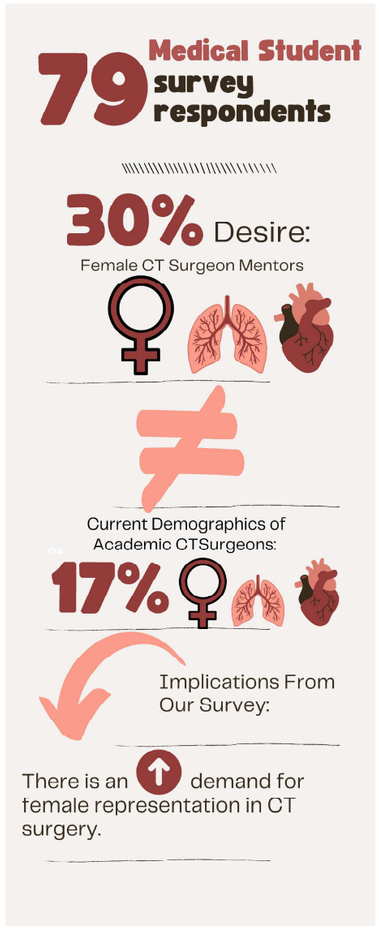
Rationale

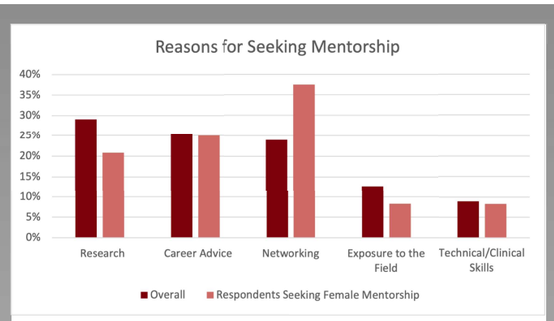
- Diversity in healthcare fosters improved and comprehensive patient care[1,2].
- Cardiothoracic (CT) surgery is one of the least diverse specialties in terms of racial and gender diversity[2,3,4,5,6,7].
- Expanding diversity within CT surgery includes addressing the needs and interests of our medical students, nationally[8].
- Currently, there are more female medical students than male medical students in the US[9]. However, there are very few female cardiothoracic surgeons when compared to male counterparts.

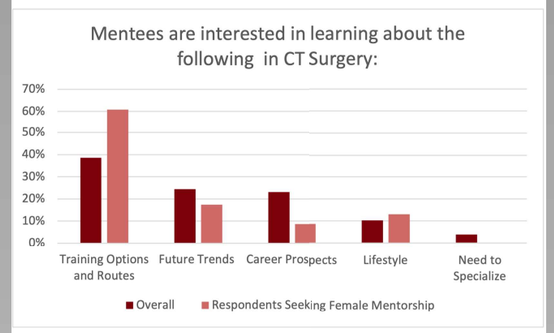
Methods

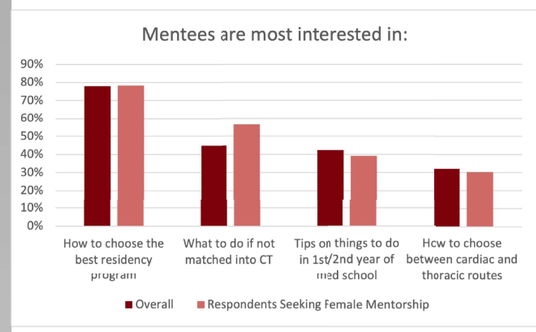
- An anonymous survey was circulated through the Thoracic Surgery Medical Student Association's (TSMA) membership list, Twitter and affiliated accounts.
- Percentages used for descriptive analysis
- Fisher exact test for comparisons

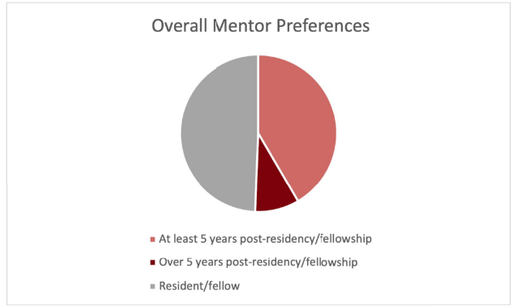
Results











Conclusions

- Our survey demonstrated a demand for female mentorship amongst prospective cardiothoracic surgery applicants.
- While 30% of future CT surgery applicants desire female mentors, only 17% of academic cardiothoracic surgeons are female[10].
- A discordance between mentorship needs and representation signifies a gap in access to mentorship[3].
- There was no significant difference in mentor needs between those who desired women mentors compared to those who did not, exclusively supporting the demand for female mentorship.
- Further studies evaluating the importance of representation and visibility within cardiothoracic surgery are crucial to diversifying the pipeline of cardiothoracic surgeons.

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Acknowledgments

Thank you to Thoracic Surgery Medical Student Association.

NO BEAT: A CASE OF CARVEDILOL OVERDOSE

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NYIT College of Osteopathic Medicine, Jonesboro, AR[2]

Background

The management of beta-blocker overdose involves IV glucagon, calcium salts, IV vasopressors, IV high-dose insulin and glucose, and IV lipid emulsion therapy. We present a case of a 43-year-old male who attempted suicide by Carvedilol overdose (suspected 400-500mg). Despite all current recommended therapies including high dose insulin and supra-therapeutic doses of pressor support, patient remained in refractory shock with eventual initiation of Veno-arterial Extracorporeal Membrane Oxygenation (VA-ECMO) support. Patient's cardiac toxicity continued to progress to complete cardiac standstill necessitating insertion of a left ventricular assist device with an Impella to promote blood flow out of the left ventricle. Four days later, patient's heart did regain contractility necessitating conversion to hybrid VAV ECMO support to help oxygenation further. After the patient's cardiac function returned, he was weaned off all mechanical support. However, despite this progress, he continued to experience multiple organ failure, which ultimately resulted in his death.

Case Presentation

A 43-year-old African American male with history significant for hypertension and depression presented to the emergency department with complaints of abdominal pain and drowsiness. He reported taking a whole bottle of his blood pressure pills as an attempt to commit suicide. The emergency medical services found a bottle of carvedilol at his bedside. It was deduced he had taken 70-80 tablets of 6.25 mg carvedilol (approximately 400-500mg).

On examination, he was found to be drowsy but arousable to painful stimuli. His vitals recorded at presentation were a pulse rate of 67/minute, blood pressure of 91/55 mm Hg, respiratory rate of 14/minute, spO2 of 85% on room air.

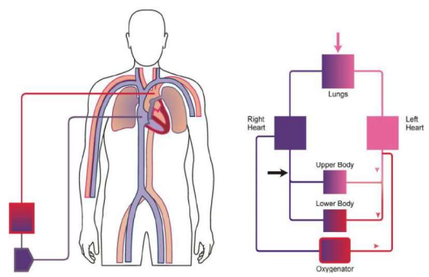
Pertinent labs ordered were significant for elevated white count of 14.1, Sodium of 127, blood glucose of 125. ECG showed normal sinus rhythm.

Management

Patient's oxygen saturation improved with 6 L nasal cannula, and he was given 2L of intravenous crystalloid. Two hours later, his blood pressure declined with mean arterial pressure (MAP) of around 60. He was started on low dose norepinephrine and hyper insulinemic euglycemia (HIE). His blood pressure dropped to a mean arterial pressure (MAP) below 60, prompting the initiation of an epinephrine infusion. Patient's level of consciousness further deteriorated, resulting in minimal responsiveness. Subsequently, he was intubated to protect his airway. Despite the treatments given, his blood pressure continued to remain low, requiring additional support with dopamine infusion. His lactic acid level increased to 6.4.

At this point cardiac support with extracorporeal membrane oxygenation (ECMO) was considered. After discussing with his family, patient was initiated on Veno-Arterial ECMO (VA ECMO). The bedside echocardiogram demonstrated severe left ventricular systolic dysfunction, along with cardiac standstill as indicated by a flat line on the arterial waveform. Cardiology was consulted and left ventricular assist device with an Impella was inserted to promote blood flow out of the left ventricle. After four days without a heartbeat, the patient began to show intermittent contractility on the arterial line with a pulmonary artery waveform. To avoid the development of north/south syndrome, the patient was switched to Veno-Arterial-Veno (VAV) hybrid ECMO. Afterwards, he was transitioned to Veno-Venous (VV) ECMO. With the return of good cardiac function, he was weaned off ECMO. However, he developed progressive multi-organ dysfunction syndrome during his hospital stay, which unfortunately led to his death.

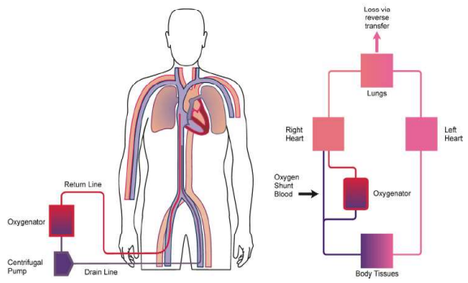
VENO-ARTERIAL ECMO



Discussion

- Carvedilol is a non-selective beta-adrenoceptor antagonist that also acts as an antagonist to alpha(1)-adrenoreceptor, making it unique compared to other beta-blockers.
- The drug is highly lipophilic and highly protein-bound.
- Although beta-blocker overdose is not uncommon, carvedilol overdose is rare and may have a distinct toxicodynamic profile.
- It can lead to a potentially life-threatening condition that requires aggressive management with a variety of treatments.
- IV lipid emulsion therapy is not always available, and the evidence for its use is mixed.
- The presented case highlights the challenges associated with carvedilol overdose and its management.
- When patient fails to respond to standard therapies and specific antidotes, the management of refractory cardiac arrest and refractory shock can be considered with extracorporeal life support (ECLS) as an effective rescue therapy and the use of assist devices may be necessary.
- Despite an unfavorable outcome in this particular case, mechanical support was successful in maintaining his hemodynamics which allowed for the return of spontaneous circulation.
- This highlights the need to keep this form of support as a valuable option in managing challenging cases such as this.

VENO-VENOUS ECMO



Conclusion

Carvedilol overdose can lead to severe cardiotoxicity and shock refractory to standard therapies. Early consideration of Veno-Arterial-ECMO support and percutaneous assist devices may be beneficial in patients with severe cardiotoxicity. Further studies are needed to evaluate the efficacy of these interventions in the management of carvedilol overdose.

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Non-Invasive Testing in Diagnosing Cardiac Amyloidosis

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1- Willis-Knighton Health System 2- NYIT College of Osteopathic Medicine

Abstract

Cardiac amyloidosis is a progressive disease that occurs when amyloid fibrils accumulate in the heart's extracellular matrix. Endomyocardial biopsy with Congo Red stain is considered the gold standard for diagnosis but is invasive[1]. Recent advancements have allowed for earlier detection via cardiac imaging, specifically in the diagnosis of transthyretin (ATTR) amyloidosis. Despite these advancements, the disease's diagnosis remains challenging due to the lack of specific clinical manifestations. The early diagnosis of cardiac amyloidosis is essential for initiating timely treatment and improving patient outcomes. This case will discuss a 73-year-old African American male who presented to the emergency department with three days of dyspnea and cough and was found to be in acute decompensated heart failure. The cluster of left ventricular hypertrophy on echocardiogram, low voltage QRS on electrocardiogram, anemia and chronic kidney disease raised suspicion for cardiac amyloidosis which was subsequently confirmed with cardiac MRI and nuclear imaging.

Background

Cardiac amyloidosis (CA) is a disorder with significant morbidity and mortality that results from the extracellular deposition of amyloid fibrils in the heart. These fibrils cause damage to the heart's structure and function, leading to restrictive cardiomyopathy and heart failure. The most common types of CA are ATTR and AL.

Although once thought to be incurable, advancements in diagnostic tools have allowed earlier detection and treatment of cardiac amyloidosis with better prognosis [2]. However, the diagnosis is often delayed as the presentation of is non-specific and can mimic many other cardiac disorders [2]. New studies are suggesting that ATTR cardiac amyloidosis remains underdiagnosed and undertreated, with an average 4-year diagnostic delay from symptom onset to cardiac amyloidosis[3]. Recent research has put emphasis on using non-invasive imaging modalities to aid in early detection for CA. Here we will discuss a case with known history of heart failure who received a diagnosis of cardiac amyloidosis after presenting to the emergency room with recurring symptoms of heart failure exacerbation.

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Case Presentation

A 73-year-old African American male presented to the emergency department with three days of dyspnea, wheezing, and non-productive cough but denied associated chest pain, palpitations, and fever.

Past medical history was significant for heart failure with preserved ejection fraction (HFpEF), hypertension, type 2 diabetes mellitus, stage 3 chronic kidney disease, chronic obstructive pulmonary disease, and recent cardiovascular accident. The patient recently had a left heart catheterization due to heart failure exacerbation and concerns of pulmonary hypertension, which revealed normal coronaries. A transthoracic echocardiogram revealed severe concentric left ventricular hypertrophy with grade 2 diastolic dysfunction, an ejection fraction (EF) of 50-55%, and severe left atrial enlargement with mild to moderate mitral regurgitation (Fig A)

Initial vitals on presentation were significant for a respiratory rate of 22 and oxygen saturation of 95% on 2 L of oxygen. On examination, auscultation of the lungs revealed bilateral crackles right greater than left with associated 2+ symmetric pitting edema of the bilateral lower extremities. Initial laboratory testing was significant for a hemoglobin of 8.2, creatinine of 1.55, around the baseline, and BNP of 2244. Chest x-ray showed an enlarged cardiac silhouette as well as bilateral pulmonary infiltrations with a small right pleural effusion. Electrocardiogram (EKG) revealed a normal sinus rhythm with low voltage QRS.

The patient was noted to have multiple hospitalizations within the past month for similar symptoms of heart failure exacerbation which were treated with iv diuresis. On closer evaluation, his clinical presentation of recurrent heart failure exacerbations and the constellation of previously documented severe concentric left ventricular hypertrophy on echocardiogram, the low voltage electrocardiogram, anemia, and chronic kidney disease, cardiac amyloidosis was considered as a differential diagnosis. For further evaluation, the patient underwent a Cardiac MRI that revealed LVEF 67%, markedly elevated T1, elevated extracellular volume (ECV) fraction, diffuse subendocardial and septal intramyocardial late gadolinium enhancement (LGE), and elevated T2 suggestive of active inflammation and edema (Fig B, C, D). Subsequent nuclear imaging with 99mTc-PYP scintigraphy revealed a heart-to-contralateral lung ratio of 1.75, strongly suggestive of transthyretin (ATTR) cardiac amyloidosis (Fig E).

The patient was treated with increasing doses of iv diuresis and was initiated on Tafamidis, an agent that binds with high affinity and selectivity to TTR and kinetically stabilizes the tetramer, slowing monomer formation and amyloidogenesis.

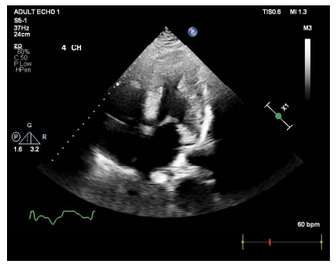

Fig A: Biatrial enlargement on echocardiogram.

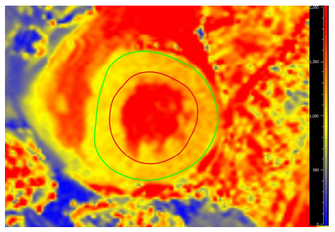

Fig B: CMR with markedly elevated T1 time (1100ms)

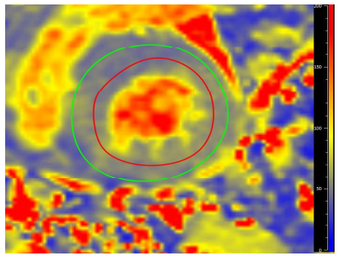

Fig C: CMR with elevated T2 time (54ms)

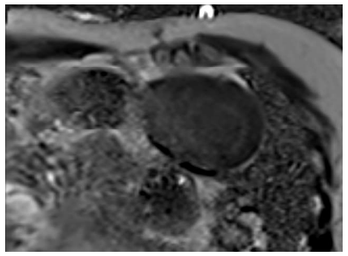

Fig D: Diffuse Subendocardial and midmural LGE (difficult to distinguish myocardium from blood pool)

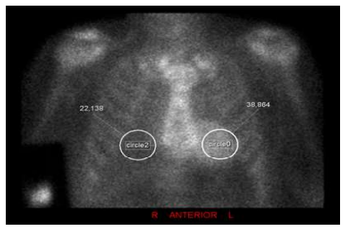

Fig E: Nuclear Medicine scan with Tc-99m showing elevated heart to contralateral lung ratio of greater than 1.5.

Discussion

Cardiac amyloidosis was once thought to be a rare disease, but its incidence is increasing as diagnostic techniques improve. The diagnosis can be challenging due to its non-specific presentation and overlapping symptomology with other cardiac pathologies.

Amyloid deposition causes concentric ventricular hypertrophy and a reduced cardiac output presenting as a restrictive cardiomyopathy . Due to the non-specific presentation and multi-system involvement, a broad differential is necessary for early diagnosis, especially in cases where symptoms cannot be attributed to a more common pathology.

The initial assessment should include an EKG and an echocardiogram. A low voltage EKG with increased wall thickness on echocardiogram should raise suspicions for cardiac amyloidosis. Low voltage EKG alone however has <30% sensitivity for cardiac amyloidosis and should be considered in combination with thickened ventricles which together are present in 70% of patients with cardiac amyloidosis [4].

Cardiac MRI (CMR) is an important tool for diagnosing amyloid cardiomyopathy. It measures the intrinsic signal of the myocardium using T1-/T2-weighted imaging sequences, T1 mapping (pre- and/or post-contrast), late gadolinium enhancement (LGE), and ECV imaging. LGE using gadolinium-based contrast is the foundation for the diagnosis of amyloidosis, however, it cannot differentiate between the types of CA.

Native T1 values are higher in areas of amyloid deposition and degree of elevation correlates to severity of disease. It also helps to differentiate between AL and ATTR amyloidosis as the T1 signal is higher in the former [5].

Bone nuclear scintigraphy using Tc-99m-labelled radiotracer is another noninvasive test to diagnose ATTR amyloidosis. Myocardial uptake equal to or greater than rib uptake is diagnostic as is a heart to contralateral lung uptake ratio >1.5 [6].

In conclusion, a strong index of suspicion based on clinical findings coupled with appropriate non-invasive testing can be used to definitively diagnose cardiac amyloidosis. Invasive testing like biopsy, is rarely needed with the advent of tools like CMR.

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Novel Robotic Training for Residents

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Willis-Knighton Health System[1] and Edward Via College of Osteopathic Medicine[2]

Abstract

Objective: To share a new, cost effective, and innovative way for residents to train with robotics that incorporates a live, non-computer generated, robotic experience.

Methods & Procedures: A simulation was set up using an inflated Penrose drain, acting as a loop of small bowel placed inside the cavity. Residents at our institution were tasked with stapling across it and performing a stapled side-to-side anastomosis with a handsewn closure of the common channel. This exercise incorporates various maneuvers including stapling, suturing, knot-tying, and use of the third arm with a live robotic experience.

Results: First- and Second-year residents were surveyed before and after the session about their comfort level and experience with computer simulations. There was a 57.6% increase in the comfort level in using the robot after the session, raising the average from 2.8 to 4.3 on a scale of 1 to 5.

Conclusion: Computer simulation, while being a very good modality, is lacking in many ways when it comes to training residents for real life situations. Proficiency with the new technology comes with frequent use and practice. Our study shows that residents prefer to use actual instruments and sutures to prepare for real cases and develop confidence. This exercise encompasses many techniques in a quick and cost-effective manner and will hopefully lead to more innovative ways to get residents early experience with the robot and even allow veterans to sharpen their skills.

Rationale

Modern technology has led to the advent of new surgical techniques that have in some instances become the new gold standard for certain surgical interventions. With the rapidly changing advances in surgery, conventional residency training has become challenged by the need to implement adequate training for residents in robotic surgery. Programs have used simulation training, in which residents are able to sit at the console and undergo modules and virtual surgeries produced by computer programs. Other techniques consist of developing synthetic tissue-like models that are placed inside cased body figures to resemble human anatomy. With these models, residents can practice maneuvering, suturing and stapling tissues to simulate surgery experiences. This project presents a novel technique that is more cost efficient and arguably superior to the virtual synthetic methods.

Methods

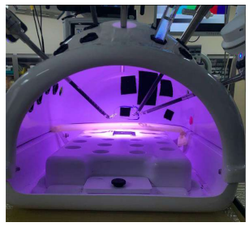

Figure 1. DaVinci Pelvitrainer is set up and docked with a Cadiere Forceps, Megasuturecut, and Tip-up fenetrasted grasper. A (1" x 5/8" x 18") Penrose drain is tied at each end and introduced.

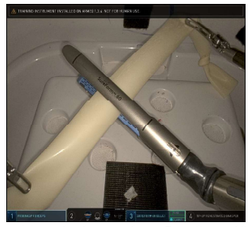

Figure 2. Once positioned adequately, a Sureform 60 Blue load is exchanged and fired.

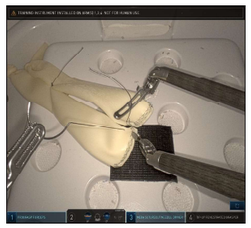

Figure 3. Megasuturecut is exchanged back in and tacking stitches are placed using silk suture.

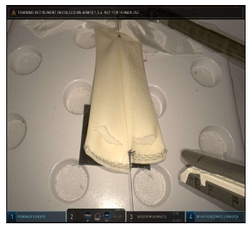

Figure 4. Tape is used to simulate the tension from mesentery and the trainee utilizes the 4th arm to hold tension and create "enterotomies".

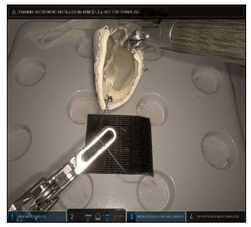

Figure 5. The stapler is used again to create an anastomosis.

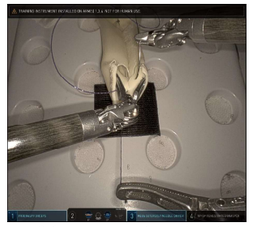

Figure 6. Closure of the common channel is then performed using V-loc suture and utilization of the 4th arm.

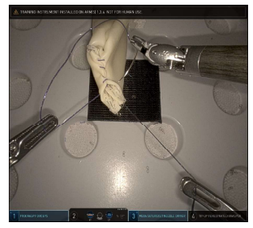

Figure 7. A second layer is placed to oversew the common channel.

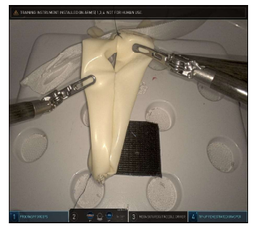

Figure 8. The finished product is a stapled side-to-side "bowel" anastomosis with a 2 layered closure of the common channel.

Results

Residents were polled both before and after this exercise with a questionnaire asking questions about comfort level using the robotic stapler, sewing on the robot, using the 4th arm, and assessing value in practicing with real instruments. An additional question was included in the post exercise survey in which residents were asked if they thought this exercise was superior to the computer simulation version.

Six residents were polled, four filled out the pre-exercise survey and three completed the exercise and completed the post exercise survey.

There was a 57% increase in comfort level using the stapler and the 4th arm, a 33% increase in comfort level sewing, and 100% of residents polled reported this was superior to the computer simulation.

Conclusions

Training on the robot is a key component to Surgical Residency programs because of the prevalence of robotic surgery. Computer simulations are exceptional practice but there is greater value in practice with real instruments. Not only will this exercise provide training in several aspects of the robotic skill set, but it also does so at a cheap cost needing only a penrose drain, two sutures, some tape, and two stapler loads. With enhanced practice, all levels of residents may benefit and be able to operate more frequently and at a better level than previously. Attendings may even be able to observe residents perform this and develop more trust in their skills. This would be an avenue for further surveys.

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Paclitaxel Induced Hypertriglyceridemia Complicated by Acute Pancreatitis: Case Report and Reviewing Existing Literature

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Background

Paclitaxel is an antimicrotubule chemotherapeutic agent commonly used in breast, ovarian, and NSCLCs. Most common side effects include alopecia, GI upset, bone marrow suppression, hypersensitivity reactions, arthralgia, peripheral neuropathy, and hepatotoxicity. Dyslipidemia is not currently recognized as a confirmed side effect of paclitaxel.

Hypertriglyceridemia is a very common lipid abnormality encountered in clinical practice and it is in fact, the most common dyslipidaemia observed in general population. In general, Hypertriglyceridemia is defined as fasting serum triglycerides of 150 mg/dL (1.7 mmol/L) or above .

Serum triglycerides of 500 mg/dL or above are considered as severe hypertriglyceridemia indicative of risk for pancreatitis. borderline and borderline high triglyceride are associated with an increased risk of Atherosclerotic Cardiovascular Disease.

In most patients, derangements in triglyceride levels results from a combination of Primary causes such as genetic variations and environmental factors; and secondary causes such as obesity, uncontrolled diabetes, alcohol misuse and drugs.

Hypertriglyceridemia can be managed by undertaking lifestyle changes, and using lipid lowering agents if these changes are ineffective. The goal of drug treatment is to decrease the risk of pancreatitis in patients with severe hypertriglyceridemia and cardiovascular disease in patients with moderate hypertriglyceridemia. For drug induced pancreatitis, it might be helpful to stop the offending agent.

Case Description

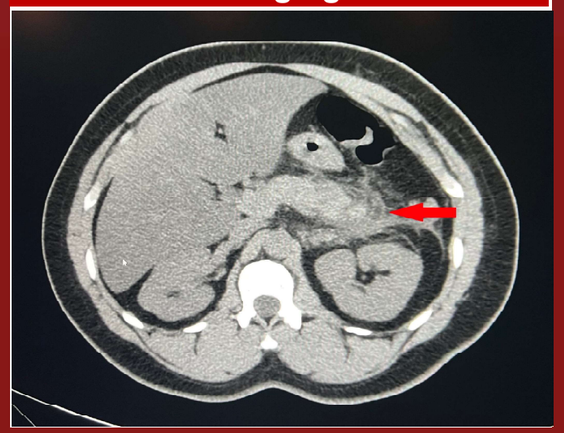
A 48 years old female with past medical histories of essential hypertension and breast cancer stage T3N1M0 which was diagnosed 8 months ago, S/P Bilat radical mastectomy with lymph node biopsy and was treated with Paclitaxel chemotherapy. Patient received 4th cycle of paclitaxel (145mg IV infusion) one week prior to presentation. Patient presented to the emergency department with **epigastric pain for the past 3 days**. Epigastric pain was associated with nausea, loss of appetite, and mild SOB. The pain was radiating to the back and bilateral shoulders, and 7/10 in intensity. The patient described the pain as dull, involving whole abdomen, and no association with meals. No clear relieving or aggravating factors.

Case Description

ROS
Mild fever/chills, SOB, and generalized weakness.
Past Surgical History
S/P bilat mastectomy and S/P hysterectomy and tubal ligation.
Social History
Pt denied any tobacco product use, ETOH, and substance use.
Family History
Breast cancer, HTN, and heart disease in the family.
Medication History
Amlodipine, Triamterene/HCTZ, Ibuprofen, Metoprolol Succinate, Ondansétron. NKDA.
Physical Exam
Temp 97.9 F, SaO2 95% on R/A, RR 18/min, HR 119/min, and BP 132/81.
Abdomen: Mildly distended to inspection, soft, tenderness in epigastric area. No HSM, rebound and or ascites. Hypoactive BS on auscultation. Resp : Increased RR, decreased breathing sound bilat base. Cardiac: Tachycardia, regular rhythm. Normal S1 & S2, no murmurs, and no peripheral edema.
Labs
CMP showed mild metabolic acidosis, Hyperglycemia, LFTs WNL. CBC was WNL. Elevated lipase. Ethyl <12 and blood cultures showed no growth after 5 days.

Serum Lipase (23-300 U/L)	Serum TG (<150 mg/dl)	AST (3-45U/L)	ALT (0-35U/L)
669	3209	53	53
3359	>1575	28	29
404	1294	25	25
264	1071	24	25
62	689	23	24

Imaging



Hospital Coarse

Hospital Coarse
A multidisciplinary team was involved in the management including hospitalist, pulmonologist gastroenterologist, and clinical pharmacist. Thiazide and Paclitaxel were held. GI specialist and hospitalist recommended management with IVF, pain control, Ezetimibe 10mg, Gemfibrozil, and clear liquid diet. Insulin infusion was not started for HTG because TG level dropped dramatically with mentioned management. Pulmonologist managed AHRF with O2 protocol and empirical antibiotics with IV Rocephin and Azithromycin for possible pneumonia. On the day of discharge; patient was free from pain and stable vital signs. TG level trended down to < 1000mg/dl and lipase <100 U/L. Patient was seen in outpatient clinic two weeks following discharge. Patient was asymptomatic and doing well.

Discussion

- The risk of acute pancreatitis increases progressively with serum triglyceride levels over 500 mg/dL, with the risk increasing markedly with levels over 1000 mg/dL. The risk of developing acute pancreatitis is approximately 5 percent with serum triglycerides >1000 mg/dL and 10 to 20 percent with triglycerides >2000 mg/dL.

- Secondary HTG usually due to DM, pregnancy, medications, and alcohol use.

- Medications: Oral estrogen and selective estrogen receptor modulator, Tamoxifen, Clomiphene, protease inhibitors, antiretroviral agents, Propofol, Olanzapine, Mirtazapine, retinoids, Thiazide diuretics, and beta-blockers. Few case reports have been reported that Paclitaxel chemotherapy may caused severe HTG.

- Pathogenesis: Severe HTG are associated with very high FA levels and can further be complicated by systemic inflammation from acute pancreatitis, direct activation of toll-like receptor (TLR) 2 and TLR4 by free fatty acids (FFAs), and direct lipotoxicity.

- In severe HTG(>1000mg/dl) induced Pancreatitis; it's recommended to be managed with plasmapheresis, insulin infusion and severe dietary restriction of fat(<5%) depending on the severity of pancreatitis.

- Hypertriglyceridemia is not listed as a side effect in Paclitaxel medication packaging; however, as evidenced in this case, there is likely a link between mitosis inhibitors and development of HTG.

Conclusions

Paclitaxel is used in many chemotherapy protocols. Therefore, it is important for clinicians to be aware that Paclitaxel may induce hypertriglyceridemia, and thereby resulting in acute pancreatitis. It may be helpful to monitor labs significant for pancreatitis as well as lipid panels when initiating Paclitaxel. This would enable early detection of derangements and would allow clinicians for earlier management thus reducing the incidence of adverse events. Paclitaxel-induced severe hypertriglyceridemia complicated by acute pancreatitis was strongly indicated in this case. The mechanism underlying the symptoms remains unclear; we speculate that it could be a result of a decrease in lipid metabolism. Moreover, patient's background such as the use of thiazide diuretics and obesity, in addition to Paclitaxel administration might have affected the outcome. Fibrate and selective cholesterol-absorption inhibitor administration, conservative management for acute pancreatitis, and cessation of chemotherapy were as effective as in previous reports. Paclitaxel-induced hypertriglyceridemia presents with the possibility of severe complications such as pancreatitis. Elucidation of the exact mechanisms and epidemiological features is required for better management.

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Parathyroid Carcinoma: Clinical diagnosis of a unique endocrine pathology

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Abstract

Parathyroid carcinoma is an extremely rare malignancy of the endocrine system with an incidence of 0.5 - 5% of patients with hyperparathyroidism worldwide. It typically presents with an indolent course, and manifestations of hyperparathyroidism usually appear well before local invasion. However, here we will discuss the case of a 69-year-old male with parathyroid carcinoma who presented with a mass so large that it caused significant tracheal compression, dysphagia, and shortness of breath before it was correctly identified as parathyroid carcinoma. Diagnosis based on tissue specimen is particularly challenging, and the only absolute proof of malignancy is the presence of metastases. This is why diagnosis of this pathology is a largely clinical one, as was such in this case where pathology did not in fact identify the specimen as a malignancy, but it was certainly parathyroid carcinoma based on its overall clinical presentation.

Background

Parathyroid carcinoma is a rare entity that typically presents initially with manifestations of hyperparathyroidism and has an overall indolent course. Men and women are equally affected, with disease occurring in the 4th or 5th decade of life. Although the exact etiology is unknown, several genetic associations exist, including the mutation of the HPRT2 gene or those with MEN syndromes. Patients typically present with symptoms of hypercalcemia such as fatigue, malaise, weakness, and weight loss. Work up includes measurement of serum PTH and calcium as well as imaging studies including neck ultrasound and 99mTc-sestamibi scan. In suspected malignancy, a CT with contrast can provide specific details on the location of the lesion in relation to other structures. Though difficult to distinguish between the two, hypercalcemia symptoms are usually more pronounced in those with malignancy.

Management is divided into two categories, based on disease severity. Complete surgical excision may offer a definitive cure, with studies showing low efficacy of radiation and chemotherapy. In patients with metastatic disease, medical management of hypercalcemia is recommended. Despite surgical efforts, parathyroid carcinomas have up to a 78% recurrence rate, most within the first 3 years.

TABLE 1. Clinical Factors of Benign Primary Hyperparathyroidism and Parathyroid Carcinoma

Factor	Benign Hyperparathyroidism	Parathyroid Carcinoma
Sex distribution, F:M frequency	4:1	1:1
Mean age at presentation, years	55	48
Serum calcium, mg/dL	< 13	> 14
Serum parathyroid hormone	> 1-3 × above the upper limit of normal	≥ 4 × above the upper limit of normal
Palpable neck mass, %	Rarely	70

Case Presentation

- **History:** 69-year-old Caucasian male who presented to the ED with difficulty breathing and swallowing. Onset was 2 weeks prior, but symptoms had acutely worsened the night before. Patient endorsed throat pain that radiated to chest, neck, and head and that was exacerbated by coughing. He had a known history of a cystic neck mass which was previously drained and had since recurred. He reported an established history of hypercalcemia but no known diagnosis of hyperparathyroidism.
- Labs revealed Calcium 15.2 and PTH >1400.
- **Review of systems:** Positive for dysphagia, wheezing, stridor, constipation, malaise, headache, and congestion
- **Physical exam:** Loud, biphasic stridor. Possible secretions noted in throat, grimaces when attempting to clear throat
- **Past medical history**: Irritable bowel syndrome
- Noncontributory surgical, family, and social history. No food or drug allergies.
- **Imaging:**
  - Neck/Chest CT - large mass extending from inferior margin of right thyroid lobe through thoracic inlet into superior mediastinum producing severe mass effect
    - Severe narrowing of subglottic trachea with lumen reduction to 8 x 6mm and leftward tracheal displacement by 1-2cm
    - Displacement of esophagus to the left by 2-3cm
    - Severe narrowing & right anterior-lateral displacement of SVC
    - 10.4 x 7.7 x 12.6 cm mass with heterogeneity in superior margin with internal cystic foci

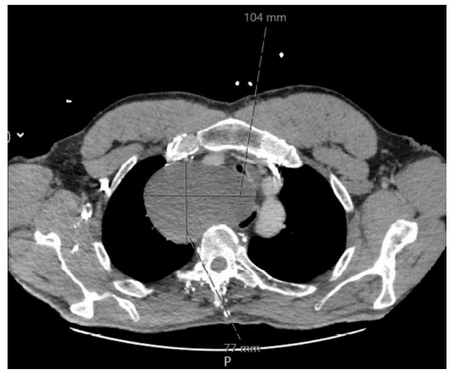

Figure 1. Axial view of mediastinal mass extending from inferior margin of right thyroid lobe into superior mediastinum

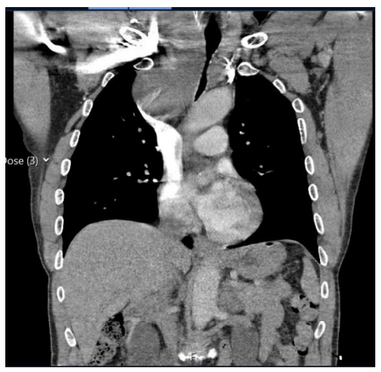

Figure 2: Coronal view of mediastinal mass with associated severe narrowing of subglottic trachea

Surgery

- Parathyroidectomy and right thyroid lobectomy performed by Endocrine surgery and Cardiothoracic surgery
- Median sternotomy incision was required for full visualization
- Mass was tightly adherent to recurrent laryngeal nerve and appeared to be infiltrating surrounding soft tissues
- **Surgical specimens:**
  - R lower neck component weighing 700mg
  - R neck mediastinal component weighing 1800mg
  - R thyroid lobe

Pathology

- Final pathology labeled as “atypical parathyroid tumor”
- Irregular proliferation of hypercellular parathyroid tissue that exhibits zones of fibrosis with hemosiderin deposition and calcification
  - immunostaining negative for malignancy markers - TTF1 (Thyroid transcription factor), thyroglobulin, & calcitonin
  - atypical mitotic features were not appreciated however invasion to the surrounding tissue and recurrent laryngeal nerve was noted
- Absence of typical malignant features including vascular invasion, perineural invasion, or elevated mitotic rate with atypical mitotic forms

Conclusions

Parathyroid carcinoma is an extremely rare malignancy which can be difficult to distinguish from benign causes of primary hyperparathyroidism, particularly when it comes to pathological examination of tissue specimens. Pathological examination is described using a combination of mitotic figures, fibrous trabeculae, and capsular and vascular invasion as identifiers to point towards malignancy. However, none of these criteria are sufficiently sensitive or specific to confirm or rule out diagnosis. Immunohistochemical staining has also been utilized but is not sufficient for accurate diagnosis either.

As pathological diagnosis is more ambiguous and less definitive, parathyroid carcinoma is a clinical diagnosis for which practitioners should be aware of. There are several presenting clinical features that are suggestive of malignancy rather than benign etiology. These include higher serum calcium levels and therefore more severe symptoms of hypercalcemia including fatigue, weakness, bone pain, nephrolithiasis, polyuria and polydipsia. Remarkably elevated PTH levels are yet another indicator that points towards a diagnosis of malignancy. Grossly, these malignant tumors are usually quite large with an average diameter >3 cm and are often stubbornly adherent to surrounding structures, which lends itself to the fact that a palpable neck mass is far more common in these cases of malignancy rather than with benign etiologies.

With all of these factors in consideration, it is as such that in this case, while pathology reports identify the specimen as “atypical”, due to overall size, symptoms, and invasiveness, it is clinically deemed a parathyroid carcinoma.

Complete en bloc surgical excision remains the only treatment option that may offer a definitive cure, and even then, parathyroid carcinomas are noted to have recurrence rate up to 78%, most often within the first three years.

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Rare cardiac tumor: Cardiac myxofibrosarcoma, a case report

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Abstract

Primary cardiac tumors (PCTs) are rare and carry an incidence of 1.38 per 100,000 population per year [1]. Myxofibrosarcomas are reported as one of the rarest forms of cardiac tumors [2].

We report a case of 55/F Caucasian patient with primary cardiac myxofibrosarcoma who presented with stroke, hypotension, and dyspnea. MRI of the brain revealed a non-hemorrhagic infarct, a small old left cerebellar and multiple watershed infarcts. On initial work up, EKG findings suggested tachycardia with left atrial enlargement and low voltage QRS with normal lab work. The transthoracic echocardiogram (TTE) revealed a large mass of approximately 5 cm in size located at the posterior wall of left atrium extending to left ventricle causing mitral outlet obstruction. Patient underwent a complete surgical resection with histopathological report of the mass indicating the presence of a primary cardiac sarcoma.

Literature suggests, these tumors are rare and associated with vicious recurrence one year after complete resection, which leads to high mortality. Tumor size of >4 cm and/or high-grade differentiation are associated with a worse prognosis. Complete resection of the tumor along with chemo and radio therapy improves survival time from 14 months to 36 months.

Background

Primary cardiac tumors (PCTs) are rare and carry an incidence of 1.38 per 100,000 population per year [1]. Primary cardiac sarcomas are rare to find, accounting for about 20 % of all primary cardiac tumors [1,2]. Myxofibrosarcomas are reported as one of the rarest forms of cardiac sarcomas [2]. Most of them are of mesenchymal origin and can be found in the Heart- the atria, ventricles, as well as in the blood vessels such as Pulmonary veins, Pulmonary arteries, and Aorta. The diagnosis is usually late and/or when the patient develops obstructive symptoms, thrombo-embolic events, or metastasis [3, 4]. Current research indicates an increase in median survival from 14 months to 36 months following complete resection and chemo-radiotherapy [2].

Case report

A 55/F Caucasian patient presented with brief self-resolving episodes memory loss, aphasia following migraine headaches since last few months associated with exertional dyspnea, episodes of hypotension. On hospital admission her vitals were normal other than BP: 88/76 mmHg and examination revealed right sided facial droop with cardiac rub and murmur on auscultation. MRI brain was recommended which revealed non-hemorrhagic infarct, a small old left cerebellar and multiple watershed infarcts. She denied smoking, using recreational drugs however reported social drinking.

On initial work up, EKG findings suggested tachycardia with left atrial enlargement and low voltage QRS with normal Lab work. The trans thoracic echocardiogram (TTE) revealed a large mass of around 5 cm in size located at the posterior wall of left atrium extending to left ventricle causing mitral outlet obstruction, high pulmonary artery pressure and left atrial dilatation (Fig A). Patient was initially managed conservatively and referred to cardiothoracic surgery. She underwent a complete surgical resection without any postoperative events.

The histopathological report of the mass indicated proliferation of malignant spindle cells with foci of necrosis and prominent mitotic figures with FNCLCC grade 3 of 3. The spindle cell population was positive for CD31 and was weakly positive for pancytokeratin indicating the presence of a primary cardiac sarcoma (Fig B1 & B2). A Positron-emission-therapy (PET) scan carried out on day 38 postoperatively showed mild metabolic activity in lower right paratracheal and right subcarinal lymph nodes along with an enlarged node in the right cervical chain at level 4 indicating a reactive process.

Patient was referred to haemato-oncology for further management and was found to have brain metastasis on MRI at MD Anderson hospital, unfortunately we don't have the results of that. Patient underwent whole brain radiation for brain metastasis and 5 cycles of Doxorubicin + Zinecard and Ifosfamide. One month after stopping the therapy restaging scans of Cardiac MRI, Brain MRI and chest CT were negative for any recurrence or metastatic disease.

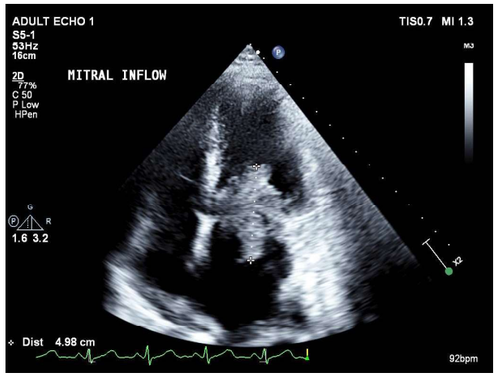

Figure A : Trans esophageal echocardiogram showing around 5 cm mass attached to the Left atrial wall and posterior leaflet mitral valve with prolapse of segments of the mass into the Left Ventricle causing obstruction.

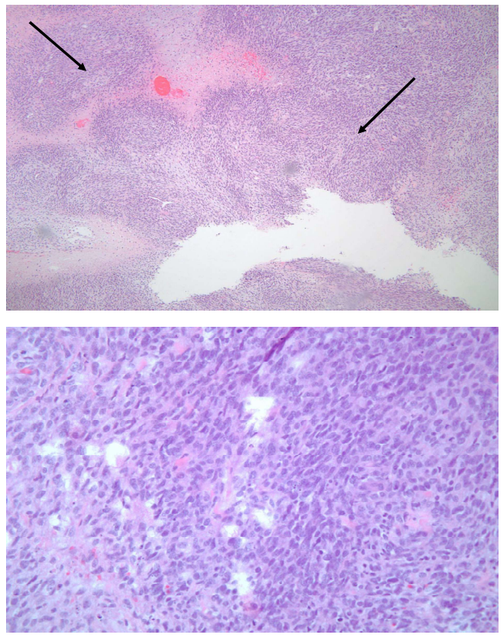

Figure B1 and B2 : Histological Image of the tumor indicating proliferation of malignant spindle cells.

Discussion

In this case, we would like to highlight the severity of illness despite subtle symptoms. The patient's tumor involved the left atrial wall and posterior leaflet of mitral valve, which itself increases the risk of left ventricular inlet obstruction and thromboembolic events. Literature suggests, these tumors are rare and associated with vicious recurrence one year after complete resection, which increases the risk of mortality. Hence, early diagnosis and aggressive management is the key to improve outcome.

Current literature states that tumors larger than 4 cm with or without high-grade differentiation are associated with a worse prognosis [3]. Compared to conservative management, Complete resection of the tumor along with chemo and radio therapy improves survival time from 14 months to 36 months, respectively [2].

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Repair of Recurrent Right Hepatic Artery Pseudoaneurysm following Cholecystectomy

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Abstract

A hepatic artery pseudoaneurysm (HAP), is a rare and often life-threatening condition that most commonly occurs after a cholecystectomy. A HAP is an outpouching that can result from arterial wall damage and lead to a blood-filled sac. In contrast with a true aneurysm, which contains all three layers of the arterial wall, a HAP contains only 1 or 2 layers. The risk of rupture is higher for HAP than that of a true aneurysm of comparable size.

In this case, a 63 y/o presents post cholecystectomy with a fever and right upper quadrant pain. The patient received a CT scan in the Emergency Department which demonstrated a smooth walled sac adjacent to the hepatic artery consistent with a hepatic artery pseudoaneurysm. The patient was taken for an exploratory laparotomy and discharged after he had recovered. He returned two weeks later with complaints of abdominal pain and weakness. The patient was treated with a coil embolization, but the bleeding had not stopped. The patient received a percutaneous thrombin injection before being discharged again. Upon return one week later the patient received another CT scan which showed a recurrent right hepatic artery pseudoaneurysm. The patient received coiling embolization and a covered stent placement which resulted in the extinguishment of bleeding.

The patient returned multiple times over the course of almost 1 month and was subjected to multiple CT scans and procedures to repair this defect and alone none of these were successful. After multiple failed attempts at repair of a hepatic artery pseudoaneurysm, the use of combination therapy including coil embolization and covered stent placement should be considered.

Introduction

The prevalence of hepatic artery aneurysms are estimated at around 0.002% with half of those being hepatic artery pseudoaneurysms [1]. Hepatic artery pseudoaneurysms most commonly occur post cholecystectomy. The incidence of right hepatic artery pseudoaneurysm post cholecystectomy is 7% and occurs 2-17 weeks after the procedure [2,3]. A few common causes of this type of injury include sepsis, damage to the vasculature, and digestior of the arterial wall secondary to an infectious bile leak [2].

A right hepatic artery pseudoaneurysm can lead to hemobilia which presents with a triad of abdominal pain, jaundice, and upper GI hemorrhage [4]. Patients with biliary bleeding present with melena in about 90% of these cases but can also present with abdominal pain and jaundice 70% and 60% of the time respectively [5].

CT angiogram and Upper GI endoscopy are commonly used modalities which can lead to a diagnosis of hepatic artery pseudoaneurysm. CT angiogram shows disruption in the arterial wall with good accuracy [1]. Doppler ultrasound can show the classic “yin-yang” or “pepsi sign” showing the bidirectional flow seen in figure 1. Upper GI endoscopy is generally the first line treatment for acute GI bleed and can be used to rule out other causes of upper GI bleeding [2].

Case Presentation

A 63 y/o Caucasian male with a medical history of atrial fibrillation, hypertension, hypothyroidism presents to the emergency department 3 weeks post cholecystectomy concerned of right upper quadrant pain as well as a fever of 100.9 F and chills. This patient urgently underwent a CT scan which showed the development of dense fluid around the right lobe of the liver consistent with a hepatic artery aneurysm. The patient was airlifted to another hospital for a higher level of care.

The man arrived at the Intensive Care Unit and was monitored for 24 hours before signs of a slow, persistent bleed from the RUQ were noticed. The patient was taken for a second exploratory laparotomy where a bile leak was repaired and he was discharged after recovering.

The patient presents to the Emergency department 2 weeks after discharge complaining of abdominal pain and weakness onset that morning. The patient received a CT scan which showed a large hematoma and a central pseudoaneurysm. Active bleeding was noted and the patient was subsequently admitted to the hospital and received coil embolization by interventional radiology. Another CT scan was performed a few days after repair which showed a small amount of flow to the pseudoaneurysm so the patient received a percutaneous thrombin injection. Doppler Ultrasound showed still flow to the coiled pseudoaneurysm. The patient was given precautions not to lift and discharged.

The patient returned 6 days after discharge with complaints of abdominal pain followed by episodes of dark bloody bowel movements. This CT showed a large nest of embolization coils, a partially thrombosed pseudoaneurysm extending lateral and anterior to the coils, and small bubbles of gas likely related to prior thrombin injection as seen in figure 2. The next day the patient received additional coiling and covered stent placement on the right hepatic artery by interventional radiology as shown in figures 3 and 4. The patient reported improved pain management, but continued abdominal tenderness. The patient seemed to be continually improving and was discharged.

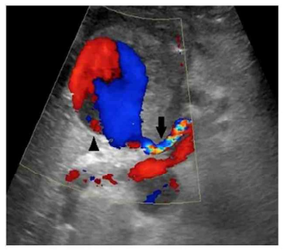

Figure 1. Doppler ultrasound findings include a characteristic “yin yang” or “pepsi sign” as shown below. This is due to the bidirectional flow and swirling of the blood within the aneurysm. We were unable to find the ED ultrasound.

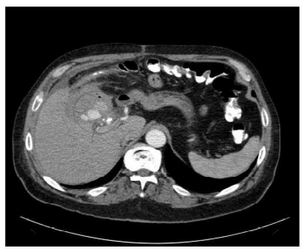

Figure 2. CT scan of abdomen showing a partially thrombosed pseudoaneurysm (72x69mm) extending lateral and anterior to the coils, and small bubbles of gas likely related to prior thrombin injection.

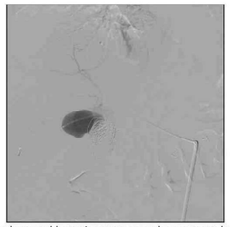

Figure 3. Pooling of blood around hepatic artery pseudoaneurysm before treatment with additional coils and covered stent placement

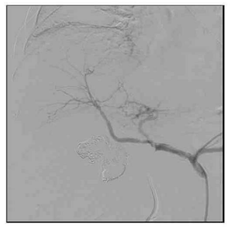

Figure 4. Hepatic artery pseudoaneurysm after treatment with additional coils and covered stent placement showing successful thrombosis.

Discussion

The most common signs and symptoms that accompany a hepatic artery pseudoaneurysm include abdominal discomfort, jaundice, anemia, hemorrhage, and acute abdomen [5]. The patient presented initially with generalized symptoms such as fever and chills. Given his recent procedure, the medical team held a high degree of suspicion of a bleed in the right upper quadrant and chose a CT scan to diagnose this bleed. On the patient’s second readmission he presented with textbook symptoms of melena and abdominal pain which is generally how a HAP presents. The use of the proper imaging modality played a major role in correctly diagnosing this patient.

The Gold standard treatment of hepatic artery pseudoaneurysm is coil embolization which has a success rate of 70-100% [6]. Surgical ligation is seen as a second line treatment when percutaneous or endovascular treatment fails because it is a challenging repair that requires in-depth knowledge of anatomical variation [3,7,8]. Endovascular treatment is another effective option which includes the placing of a stent or the use of liquid agents to reduce blood flow to the pseudoaneurysm [9]. Stents are rarely used in isolation for treatment, because of the risk the recurrent bleeding [6,10]. Percutaneous thrombin injection is used to treat false aneurysms but can result in activation of the immunologic complications and coagulopathies [10]. Recurrent bleeding may have occurred as new blood vessels formed between the proper hepatic artery and the right hepatic artery after each repair [11].

Dual therapy involving both embolization and stent placement proved successful in managing this patient’s pseudoaneurysm. Moving forward, the use of dual therapy for treatment of recurrent hepatic artery pseudoaneurysms should be considered.

Conclusions

Right Hepatic Artery Pseudoaneurysms are a rare complication of cholecystectomy. It is vital to catch this type of condition quickly due to the high chance of rupture.

Diagnosing a hepatic artery pseudoaneurysm requires a high degree of suspicion and proper imaging to manage correctly. CT angiograms are an important diagnostic tool for confirming this diagnosis. This type of imaging shows the defect in the greatest detail and allows for proper planning no matter the form of treatment patients receive.

The gold standard treatment for HAP is coiling embolization. Other methods of treatment include stent placement, the use of liquid agents (glue), direct thrombin injection, and surgical ligation. In the case of recurrent pseudoaneurysms where initial management has failed, the use of dual therapy involving artery embolization and stent placement should be utilized.

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Splenic Artery Aneurysm Rupture in Pregnancy at 31 Weeks

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Willis-Knighton Health System[1] and Acadian Health Systems[2]

Abstract

This case report poster presentation describes a rare case of a 26-year-old pregnant woman with a splenic artery aneurysm (SAA) that caused preterm delivery and fetal demise. The patient was admitted to the hospital with abdominal pain at 31 weeks of gestation. After a nonreassuring fetal heart tones and worsening biophysical profiles, a crash C-section was performed to find an intact uterus and normal placental attachment. The fetus was delivered and crashed multiple times and ultimately did not survive. When the bleeding did not stop it was found to be coming from a ruptured splenic artery which was quickly packed and repaired by a surgeon and the mother survived. This poster highlights the clinical presentation, diagnostic workup, and management of this rare and potentially life-threatening condition in pregnancy. It also emphasizes the importance of early diagnosis with imaging and prompt management to prevent adverse maternal and fetal outcomes.

Background

Splenic artery aneurysms are the most common visceral artery aneurysms and are often asymptomatic. Approximately 1%-10% of the population has a SAA and the highest risk of rupture comes from pregnancy. Being able to accurately identify the signs and symptoms of a ruptured SAA is essential in the comprehensive care of managing acute abdominal pain in pregnancy as the mortality rate of rupture is around 75% in the mother and 95% for the fetus. The hypothesis as to why SAA are more likely to rupture in pregnancy is from normal bodily adaptations to pregnancy; increased blood flow through the portal system, increased cardiac output, and hormonal influences of estrogen and progesterone on arterial wall composition. Risk factors for SAA rupture include forceful trauma to the abdomen, Ehlers Danlos syndrome, portal hypertension, and pancreatitis. All of these affect the structural integrity of the vessel wall, leaving it more vulnerable to expanding and causing an aneurysm (1). The treatment for a SAA is endovascular repair and is recommended for all symptomatic cases and all cases >2cm due to the risk of rupture (3) If rupture is found, it is best to attempt to save the spleen to preserve its immunologic functions, but if the aneurysm is too close to the hilum a splenectomy has to be done like in this case (4).

A

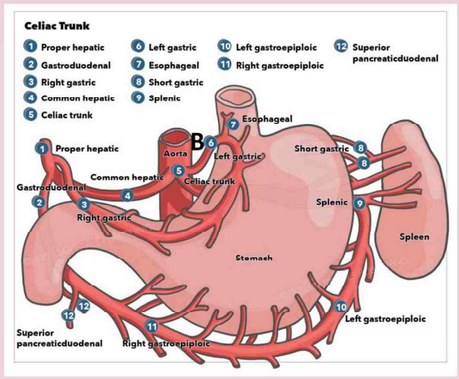

Figure 1 Celiac trunk. This image shows the splenic artery coming off of the celiac trunk running behind the stomach into the spleen and giving off the short gastric as well as left gastroepiploic arteries. (1p)

Case presentation

- A 26 year old female 31 weeks and 6 days pregnant G4P2-0-1-2 presented to the emergency department with lower abdominal pain and generalized weakness. She did not have any vaginal bleeding.
- Medical history: Obesity and asthma. Only taking prenatal vitamins.
- The patient is a non-smoker and does not drink alcohol or have a history of illicit drug use. Surgical history is notable for two prior c-sections of unknown reason. This current pregnancy was notable for a large-for-gestational age fetus but has otherwise been uncomplicated.
- Initial fetal heart rate had a run in the 70s and was promptly transported to another facility for an emergency c-section. Biophysical profile was 8/8. Ultrasound revealed a mild amount of fluid in the cul-de-sac. The patient at this time was complaining of occasional sharp bilateral upper quadrant pain but overall felt improved.
- Later the same night the fetus has heart rate in the 180s with decreased beat to beat variability. Repeat biophysical profile revealed 6/8, to and fro movement. Fetal decelerations were noted on the monitor and the patient was sent for a crash c-section.
- A vertical incision was made to show significant amount of bright red blood was noted coming from the abdominal cavity.
- A 4 lb 14 oz female neonate was delivered via a horizontal uterine incision with an umbilical pH of 6.82. The neonate was intubated and did not have a documented heart rate until 18 minutes of life.
- The patient had several large blood clots that were removed but she continued to have bleeding that seemed to come from the upper abdominal area. She was not noted to have a uterine rupture, a placental abruption or placenta previa. The bleeding was localized to the left upper quadrant and was packed and the general surgeon was called.
- She was given 2 units of FFP and 4 units of packed red blood cells. The patient was stabilized, blood pressure went from 60/30 to 100/60 and pulse went from 130 BPM to 100 BPM.
- The general surgeon discovered a retroperitoneal hematoma above the pancreas and localized the bleeding to a ruptured splenic artery aneurysm that required splenectomy. After splenectomy was performed, bleeding had stopped and the patient was closed.
- The patient was placed on bed rest and recovered. The neonate was unable to maintain pressure support and later crashed multiple times and ultimately did not survive due to severe metabolic acidosis and respiratory failure.

Imaging

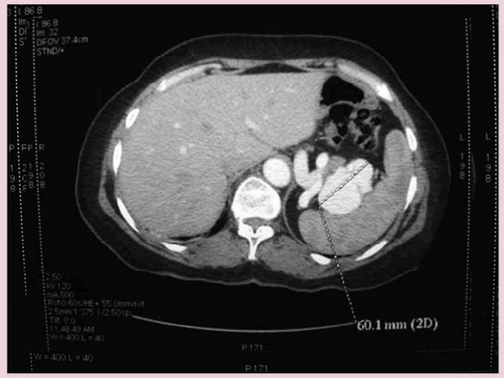

Figure 3 Extensive clot formation can be see in these ultrasounds with the presence of a normal spleen, indicating that an aneurysm has ruptured before the spleen. Establishing splenic integrity and blood flow with doppler could aid in the diagnosis of SAA (3p)

Ultrasound

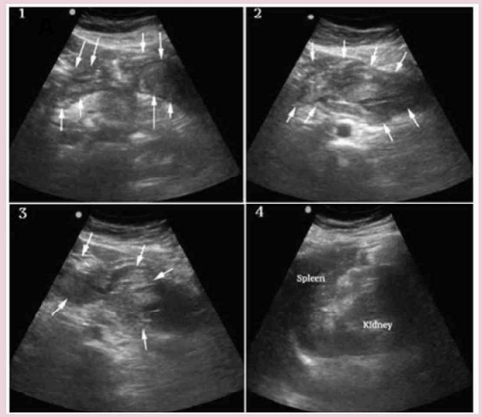

Figure 3 Extensive clot formation can be see in these ultrasounds with the presence of a normal spleen, indicating that an aneurysm has ruptured before the spleen. Establishing splenic integrity and blood flow with doppler could aid in the diagnosis of SAA (3p)

Conclusions

In conclusion, SAAs are a rare but serious cause of preterm delivery and fetal demise. With prompt recognition and surgical management, there have been cases of both mother and fetal survival. Understanding the risk factors paired with symptoms of sharp abdominal pain with nonreassuring fetal heart tones, could help add SAA to the differential leading to rapid management and improved outcomes. Ultrasound is a great way to assess the abdominal cavity for for free fluid when the uterus is firm and intact and there is no vaginal bleeding accompanying the abdominal pain.

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The Cryptic Case of the Intramedullary Cavernoma

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ABSTRACT

Intramedullary cavernoma is a rare condition that involves a cluster of abnormal blood vessels within the spinal cord. With the incidence of cavernomas being around 1.9 cases per 100,000 people per year, lesions located at the spinal cord only account for 3% to 5 % of those cases. The clinical presentation of the disease can vary depending on the location and size of the lesion. The objective of this clinical case report is to review the patient's clinical presentation, radiological finding, and post-surgical rehabilitation progress. In this case presentation, we describe a 19-year-old male who presents to the emergency department with back pain and lower extremity weakness. A few months prior, the patient experienced upper back and chest pain that progressed to numbness and weakness of the lower extremities along with dysesthesias of the upper and lower extremities. Urinary retention was noted as well. MRI of the spine revealed an intramedullary lesion at the cervicothoracic junction with vasogenic edema. Based on the characteristics of the lesion, a diagnosis of intramedullary cavernoma was made. The patient underwent a cervical laminectomy of C2-T2. Postoperatively, the patient continued to experience a degree of numbness in his right lower extremity, hypersensitivity in his right upper extremity and weakness in the lower extremities. Intramedullary cavernomas are rare lesions, and their management can be challenging. Surgical resection is the treatment of choice for symptomatic lesions, although the risk of recurrence should be considered. In cases of multiple lesions, serial imaging and close follow-up are necessary to detect recurrence or new lesions. In conclusion, intramedullary cavernomas should be considered in the differential diagnosis of patients presenting with progressive neurological symptoms. Early diagnosis and prompt management can improve the outcome of the disease.

BACKGROUND

- Intramedullary cavernoma is a rare vascular malformation of the spinal cord that can cause significant neurological symptoms and disabilities. It involves a cluster of abnormal blood vessels within the spinal cord and is estimated to have an incidence of around 1.9 cases per 100,000 people per year. Lesions located at the spinal cord only account for 3% to 5% of those cases as well as cavernomas accounting for 5% to 12% of all spinal vascular anomalies.[1,2,7] The clinical presentation of intramedullary cavernoma can vary depending on the location and size of the lesion and can include neurological deficits such as weakness, numbness, tingling, loss of sensation, and bowel or bladder dysfunction.[4]
- The pathophysiology of intramedullary cavernoma is stated to be angiographically occult malformations that are characterized by sinusoidal spaces that are abnormally dilated with thin walls that lack elastic fibers and smooth muscle.[3,6] The potential three mechanisms of growth for the cavernomas include recurrent small bleeds, slow growth increasing the mass of the malformation, and development of an acute massive hemorrhage leading to rapid mass effect.[3,4] According to literature, patients who have intramedullary spinal cord cavernomas with a lesion greater than 1 cm, presence of symptoms and prior hemorrhage are at a higher risk of progressive neurological deterioration and recurrent hemorrhage.[5] These factors indicate a need for surgical removal of the lesions for those that are symptomatic with a history of bleeding to prevent complications.
- Early detection and prompt treatment are crucial in preventing neurological deterioration and minimizing the risk of complications. Treatment options may include surgical resection, radiation therapy, or observation depending on the size and location of the lesion, as well as the patient's overall health and clinical presentation. We highlight the importance of early detection and prompt treatment of this rare condition, in order to prevent neurological deterioration and minimize the risk of complications.

CASE STUDY

- An 18-year-old Caucasian male with no significant past medical history presented to the emergency department complaining of lower extremity weakness and back pain. He reported experiencing upper back and chest pain a few weeks prior along with progressive numbness, weakness, and dysesthesias in his extremities and urinary retention. On physical examination, the patient was alert and oriented to person, time, and place, with pupils equal, round, and reactive. Facial strength and sensation were intact and symmetrical, and tongue was midline. Negative Hoffman's and clonus were observed, and reflexes were 3+ Achilles bilaterally.
- Motor strength evaluation showed that the right deltoids, biceps, triceps, wrist flexions, wrist extension, interosseous, and grip were 4/5, while the left deltoids, biceps, triceps, wrist flexions, wrist extension, interosseous, and grip were 5/5. The right and left quadriceps, hamstrings, gastrocnemius, anterior tibialis, and extensor halluces longus were 3/5. Magnetic Resonance Imaging (MRI) showed an ovoid intramedullary structure at C7-T1 with associated edema spanning from C4-T3, indicating an intramedullary cavernoma at cervicothoracic junction with vasogenic edema at contiguous levels.
- The patient underwent a cervical spinal laminectomy/fusion and cavernoma resection, posterior approach with excision of spinal cord lesion C6-T2, which he tolerated well. Postoperatively, his pain was managed with IV and oral medication, including oral valium to control muscle spasms. However, he continued to experience a degree of numbness in his right lower extremity, hypersensitivity in his right upper extremity, and weakness in both lower extremities. Upon discharge, the patient was transferred to an inpatient rehabilitation hospital.
- During the patient's stay at the inpatient rehabilitation hospital, he underwent physical therapy (PT) and occupational therapy (OT) evaluation, which revealed several impairments including impaired ambulation, impaired balance, impaired transfers, impaired bed mobility, impaired activity tolerance, impaired strength, and impaired activities of daily living. He received 3 hours of therapy including PT and OT for 5 days a week. The patient was in the hospital for a total of 41 days, during which he made significant progress in improving his muscle strength, balance, transfers, bed mobility, activity tolerance, and activities of daily living.
- At the time of discharge assessment, the patient had shown significant improvement compared to his baseline assessment. However, he still experienced limitations, including decreased functional strength with decreased knee stability, and decreased dynamic standing balance. The patient had reached his maximum functional level and was deemed fit to return home. Outpatient therapy was recommended to continue his rehabilitation and improve his condition to the point where he can return to his prior level of function.

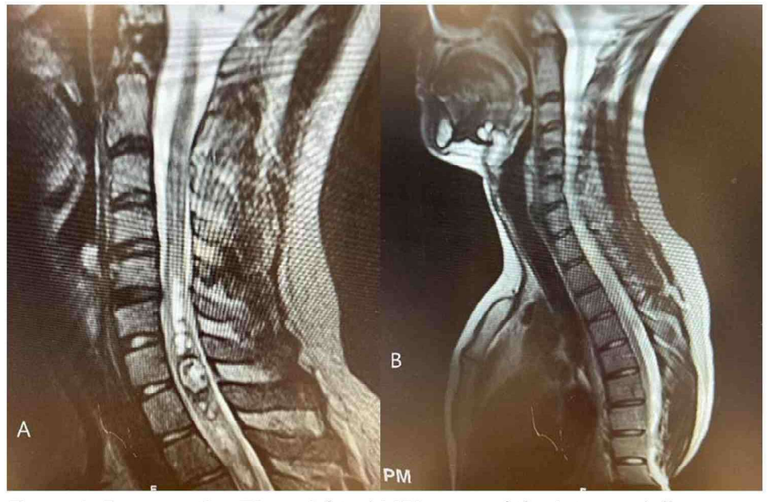

Figure 1. Preoperative T2- weighted MRI scans of the intramedullary cavernoma at C7-T1 from a cervical (A) and cervical/thoracic (B) view

DISCUSSION

- Incidences of cavernomas typically appear around the third and fourth decade of life with prevalence of the female patients.[7] This case is particularly interesting due to the fact that he has two younger brothers who have had similar pathologies. Notably, the patient is younger than the average age of onset for this rare condition. The patient's siblings have previously been diagnosed with intracranial cavernomas, which required brain surgery to remove the angiomas.
- The familial connection in this case highlights the potential for genetic factors to play a role in the development of intramedullary cavernomas. In a study by *Gross et al*, 9% of the 352 patients reviewed with intramedullary cavernoma had a family history of the lesion.[8] It is believed that familial inheritance is based on an autosomal dominant pattern, which is associated with the loss of the CCM1 protein, a vital factor in the development of cavernomas.[2,4]
- Early detection and intervention are critical in patients with a family history of spinal cord intramedullary cavernomas. The diagnosis of intramedullary cavernomas still relies on magnetic resonance imaging, which is considered the gold standard.[1,2] Regular screening, such as annual screening, may be necessary to identify any developing lesions and enable timely surgical management, reducing neurological deterioration and complications. Cranial MRIs should be considered due to the prevalence of coexisting intracranial cavernomas.[4]
- According to the study by *Duetsch et al.*, less than 50% of patients with neurological deficits have an improvement post-surgery.[10] There was also a trend of dysesthetic pain for post-surgical patients which included longer duration of symptoms compared to those without dysesthesia.[9] For patients with severe axial pain, there is debate whether excision of the cavernoma will outweigh the comorbidity of post-surgery complications with the alleviation of pain-related symptoms.

CONCLUSION

- Intramedullary cavernomas are a rare cause of progressive neurological symptoms. Therefore, they should be considered in the differential diagnosis of patients presenting with such symptoms as well as family history. Early diagnosis and prompt management can lead to better outcomes.

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The Evolving Shades of Hashimoto Encephalopathy – A Review and Case Report

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Abstract

INTRODUCTION: Hashimoto Encephalopathy, or Steroid-responsive encephalopathy associated with autoimmune thyroiditis (SREAT) is a controversial diagnosis assigned to broad range of neuropsychiatric presentations in the presence of subclinical or mild thyroid disease and thyroid antibodies in the serum. With the increasing understanding of autoimmune encephalitis, HE has become more of a diagnosis of exclusion. We present a case of HE as well as a literature review of this elusive disease. **EPIDEMIOLOGY**: HE can affect both pediatric and adult population. Among adults, a female predominance and a mean age of about 45 is reported. **CLINICAL PRESENTATION**: Acute to subacute encephalopathy, but also, seizures, stroke-like episodes, aphasia, ataxia, sleep abnormalities, tremors are commonly seen. Schizophreniform and amnestic changes predominate psychiatric presentation. **DIAGNOSTIC FINDINGS**: By definition, serology must be positive for anti-thyroid antibodies. Non-specific MRI changes and EEG patterns may be seen. CSF may contain elevated cell counts, oligoclonal bands and proteins. **PATHOPHYSIOLOGY**: Cross-reactivity against brain antigens, and activation of CD4+ T cells are thought to inflict vascular and neuronal damage. **TREATMENT**: HE mostly responds to high-dose steroids. Plasma exchange, IVIG and immunosuppressants are further treatment options. **CASE REPORT**: A 42-year-old Caucasian male was referred to Endocrinology for multinodular goiter and Hashimoto thyroiditis. Despite achieving euthyroid status, the patient went on to develop major depressive disorder with psychotic features, prominent for paranoia and poor concentration. Labs were remarkable for anti-thyroglobulin antibody titers over 4000 and mildly elevated anti-TPO. The patient also developed distressing chronic urticaria that preceded the behavioral changes. After neurological workup including brain MRI, autoimmune serology, CSF analysis, a presumptive diagnosis of HE was made and treatment with corticosteroids were started. **CONCLUSION**: HE is a diagnosis of exclusion with diverse presentation. Given the favorable response to steroids, it must be considered after ruling out more definitive differential diagnoses for autoimmune encephalopathy.

Introduction

HE, first described in 1966, is a loose triad of encephalopathy, anti-thyroid antibodies (ATAs) and steroid-responsiveness, thereby deriving the other name it is goes by in the current literature – **Steroid Responsive Encephalopathy in Autoimmune Thyroiditis** (SREAT). In a study conducted in Mayo Clinic, only 27% of patients referred with suspected Hashimoto encephalopathy met criteria for an autoimmune CNS disorder. Out of these, only 2/3rds met criteria for probable HE. (1) Interestingly, the titers of ATAs did not significantly differ in patients with autoimmune CNS disorder and without. The prevalence of ATAs in the general population is estimated to be about 10-15%. (2) Whether these antibodies bind to certain antigens in the brain is not definitively established. Furthermore, the last two decades have seen the discovery of several neuronal antibody-mediated paraneoplastic and autoimmune encephalitis. For these reasons, it has been sidelined to be a **diagnosis of exclusion**, reflected in the criteria proposed by Graus et in 2016. (3)

Diagnostic Criteria for Hashimoto Encephalopathy

1. Encephalopathy with seizures, myoclonus, hallucinations, or stroke-like episodes
2. Subclinical or mild overt thyroid disease (usually hypothyroidism)
3. Brain MRI normal or with non-specific abnormalities
4. Presence of serum thyroid (thyroid peroxidase, thyroglobulin) antibodies
5. Absence of well characterized neuronal antibodies in serum and CSF
6. Reasonable exclusion of alternative causes

Figure 1. A. Criteria for Hashimoto Encephalopathy proposed by Graus et al. All six must be met.

Epidemiology

HE has been described in **both adults and children** of, albeit with different presentations. In adults, ages 40 to 60, with 70:30 female predominance are most reported. (4) In children, a mean age of 10 is reported, once again with female predominance. (5)

Clinical Presentation

A variety of neuropsychiatric manifestations have been reported adding to the mystique of this diagnosis. **Altered levels of consciousness, schizophreniform changes**, are most seen, followed by **cognitive dysfunction, particularly amnesia, myoclonus, seizures, and ataxia**. (6) **Stroke-like features**, and fulminant courses leading to coma have also been described. (7) In children, epilepsy is more commonly encountered. A decline in school performance may accompany these symptoms. (8) Despite the presence of ATAs, many of these patients **may be euthyroid.** (9)

Diagnostic Findings

In line with the reason why HE is a diagnosis of exclusion, HE lacks distinct findings on labs and imaging. The correlation of ATA titers with disease activity have been conflicted. CSF analyses may show elevated protein, oligoclonal bands and lymphocytic pleocytosis. Multifocal or confluent subcortical lesions are seen on T2-weighted MRI but functional imaging may show ischemic and/or demyelinating changes. (10) Decreased blood flow has been observed on SPECT scan. (6) Abnormal slowing and sharp waves are reported on EEG (11)

Pathophysiology

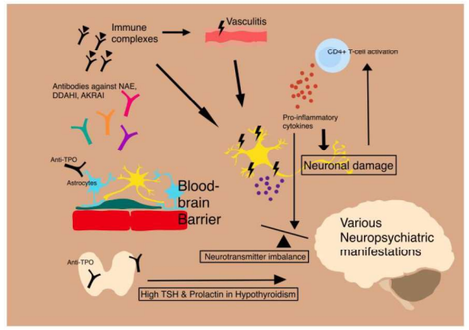

Figure 2. The current understanding of the pathophysiology of Hashimoto Encephalopathy

In vitro studies have shown the anti-TPO antibodies to bind to astrocytes. (12) For this to a feasible mechanism, however, there must be a breakdown in the blood-brain barrier. Anti-NAE, anti-DDAHI and anti-AKRAI are some of the antibodies that bind shared antigens in the brain as well as the thyroid. (13) Direct antibody-mediated effects and immune complex deposition can lead to direct neuronal injury and via vasculitic ischemic insult. (14) CD4+ activation have been demonstrated in the initial attack as well as relapses. (15) All of these promote the release of T-cell and monocytic inflammatory cytokines (TNF-alpha, IFN-gamma, MCP-1), which can also dysregulate neurotransmitter balance. (16) Elevated TSH in hypothyroidism can increase prolactin levels which can affect the mental status.

Treatment

A severe first episode warrants IV methyl prednisone 500-1000 mg/day, followed by prednisone 1-2mg/kg/day, to be slowly tapered off. Prednisone may be given initially in cases of mild-to-moderate cases. Relapses may be treated the same way. (17) IVIG and Plasma exchange are a common and effective alternative. Immunomodulators including azathioprine, mycophenolate, rituximab may be used in relapsing cases as steroid-sparing ages. An objective post-treatment evaluation to avoid mistaking physiological confounding responses from steroids and to differentiate partial from complete response. (1)

Case Report

A 42-year-old Caucasian male was referred to Endocrinology for multiple thyroid nodules and Hashimoto thyroiditis. US, FNA and molecular marker testing, the nodules were determined to be benign. TSH was 5.7 and FT4 0.7. Anti-TPO titer was low positive, but anti-thyroglobulin titers were above 2000. He was started Levothyroxine therapy. However, the more distressing symptom was his urticarial rash over the legs, arms, buttocks, that he had for weeks and didn't respond to steroid cream. It was noted that he experienced minimal improvement with a mild step up in the dosage of thyroid replacement, which was then further increased with significant improvement. But shortly after, the patient developed anxiety, difficulty concentrating and insomnia, which over months, progressed to MDD with prominent psychotic symptoms. He believed he was being constantly watched and grew fearful of his surroundings. He was admitted to a behavioral health center. However, his symptoms continued to worsen while being treated with antidepressants. MRI brain was negative. He was then referred to Neurology. CSF analysis was significant for elevated proteins, borderline high oligoclonal bands and negative infectious panel.

A presumptive diagnosis of HE was made, and prednisone treatment initiated at 10mg/day, and slowly titrating up to 1mg/kg/day. The patient reported significant improvement in mental status, as well as with his hives. Interestingly, the ATA titers did not trend down significantly despite clinical improvement.

Conclusions

Hashimoto Encephalopathy continues to be an elusive diagnosis with myriad neuropsychiatric manifestations, lack of specific diagnostic findings, and poor understanding of pathophysiology, But it must be considered after screening for possible autoimmune encephalitis and ruling out the more distinct antibody-mediated encephalitis. In that space, despite the non-specific nature, testing for anti-thyroid antibodies and including this diagnosis are crucial, considering that Hashimoto Encephalopathy is highly responsive to immunotherapy.

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Unusual Presentation of Classical Hodgkin Lymphoma in HIV

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Background

Classical Hodgkin lymphoma (cHL) with hepatic involvement as the presenting feature is rare, and is usually seen in immunocompromised states such as HIV. We present a case of 37-year-old African American male with a history of Human Immunodeficiency Virus (HIV) on highly active antiretroviral therapy (HAART), who presented with fatigue, weight loss, profound anemia, hyperbilirubinemia, and hepatosplenomegaly. The patient had no peripheral lymphadenopathy or history of B (fever, night sweats) symptoms except for weight loss. A liver ultrasound revealed two relatively hypoechoic solid masses in the right lobe and mild sludge in the gallbladder. Computed Tomography (CT) abdomen with contrast showed multiple masses throughout the right lobe of the liver, likely representing diffuse hepatic metastases or multifocal hepatocellular carcinoma. Retroperitoneal lymph node enlargement was also noted. However, repeat Ultrasound showed no hypoechoic lesions, necessitating a random liver biopsy that showed granulomatous inflammation with intrasinusoidal iron deposition, but no malignancy. His total bilirubin continued to trend up and Hemoglobin continued to drop. A bone marrow biopsy was done for refractory anemia, which showed cHL. Re-examination of the liver biopsy specimen by the pathologist with additional immunohistochemical stains confirmed liver involvement by cHL.

Case Presentation

A 37-year-old African American male with a history of chronic hepatitis B and HIV presented to the emergency department with increasing fatigue, weakness, and diffuse abdominal pain for the past week. He reported yellowing of his eyes, nausea, decreased appetite but denied dark stools hematuria, hematemesis, and any recent infections. He claimed to be compliant with HAART.

On physical examination, the patient appeared thin and malnourished with oral thrush and positive icterus. BMI of 21.7. Vitals revealed increased heart rate of 122/min, blood pressure of 99/55 mm Hg, respiratory rate of 18/min, temperature of 98.1 F, spO2 of 99% on room air. 2+ pitting edema noted in bilateral lower extremities. There was no palpable peripheral lymphadenopathy.

Pertinent labs ordered revealed severe anemia with a hemoglobin of 3.4, hematocrit of 11.4, mean corpuscular volume of 80.9, red cell distribution width of 24.3, and elevated liver function tests with a total bilirubin of 9.7, direct bilirubin of 7.8, indirect bilirubin of 1.2, aspartate aminotransferase of 76, alanine transaminase of 29, alkaline phosphatase of 213. Further investigations revealed iron studies within relatively normal limits, but ferritin of >10000, absolute reticulocyte count of 1.7, lactate dehydrogenase of 249, haptoglobin of 112, and negative coombs test. Urine bilirubin and urobilinogen were positive. Peripheral smear showed occasional schistocytes, burr cells, and target cells. Absolute CD4 count of 153, HIV RNA levels undetectable. Hepatitis B surface antigen positive. Hepatitis B DNA levels <10.

Management

The patient received four blood transfusions, and was started on fluconazole, atovaquone, and Biktary (HAART). A liver ultrasound (Figure A.) revealed enlarged liver with two relatively hypoechoic solid masses concerning for possibility of hepatocellular carcinoma. CT abdomen (Figure C.) with contrast showed multiple masses throughout the right lobe of the liver concerning for diffuse hepatic metastases or multifocal hepatocellular carcinoma, also showed extensive retroperitoneal lymph node enlargement and mild splenomegaly. The decision was made to do an ultrasound-guided-biopsy of the liver lesions. On repeat ultrasound (Figure B.), no definite discrete liver masses were identified. A random liver biopsy was done that showed noncaseating granulomatous inflammation with no evidence of malignancy or infection. Infectious work up including tests for opportunistic infections resulted negative.

The patient's hemoglobin continued to drop, and liver function tests continued to trend upwards. Bone marrow biopsy was done for refractory anemia. Magnetic resonance cholangiopancreatography (MRCP) (Figure D.) showed hepatosplenomegaly with innumerable lesions noted throughout the liver concerning for lymphoproliferative disorder, less likely metastasis. Bone marrow biopsy showed Classical Hodgkin Lymphoma (cHL). Re-examination with additional immunohistochemical stains on the liver biopsy specimen confirmed focal liver involvement by cHL.

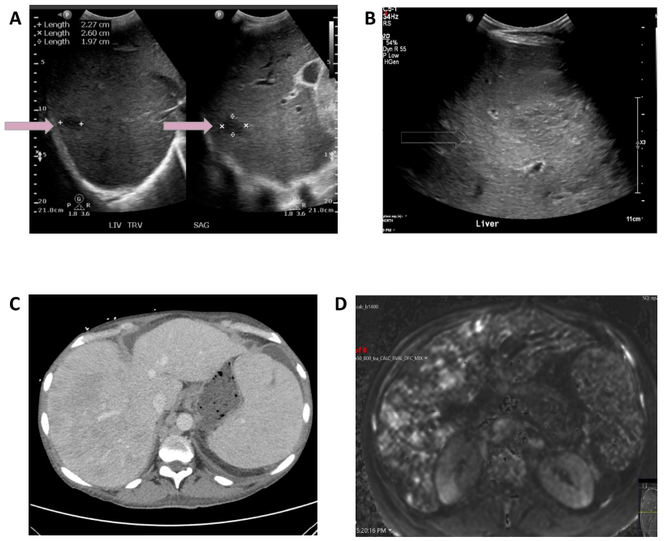

Figure A. Liver ultrasound showing enlarged liver with two hypoechoic lesions.
Figure B. Repeat liver ultrasound showing no focal lesions.
Figure C. CT abdomen with contrast showing hepatomegaly with multifocal hypodense lesions in liver. Mild splenomegaly noted.
Figure D. MRCP abdomen showing hepatosplenomegaly with innumerable lesions noted throughout the liver.

Discussion

- This case highlights the challenges associated with the unusual presentation of cHL in HIV patients, where clinical presentation can be nonspecific or atypical with a higher incidence of B symptoms, organ involvement, and unusual presentations, such as bone-only disease.
- Liver involvement as the sole presenting manifestation of cHL is uncommon, and diagnosis of liver involvement by cHL is challenging due to the small size of the foci and radiological features may mimic other liver tumors.
- Infradiaphragmatic lymphadenopathy alone is uncommon, and bone marrow involvement at presentation is associated with the advanced clinical stage.
- The presented case underscores the importance of considering cHL as a differential diagnosis in HIV patients presenting with unusual symptoms, including abnormal liver function tests or abdominal pain.
- Diagnosis may require multiple imaging techniques and extensive pathological evaluation.

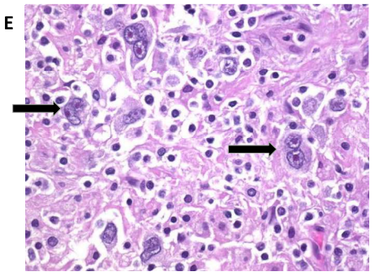

Figure E. Example of Reed-Sternberg cells seen in cHL.

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Ventricular Fibrillation caused by R on T phenomenon

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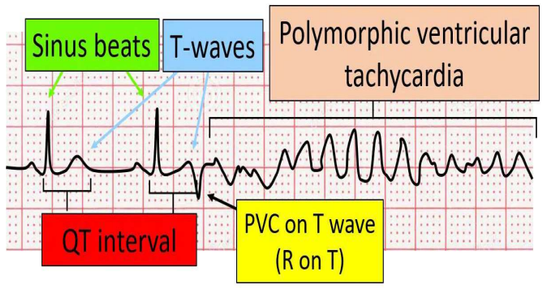
Introduction

The R on T is an important EKG finding that simply means the QRS complex from a premature ventricular beat (PVC) lands on the preceding T wave also known as the vulnerable period and sets course for dangerous arrhythmias. Most commonly a temporary epicardial pacemaker insertion is standard protocol status-post cardiothoracic surgery, because of its ability to recognize and terminate dangerous arrhythmias. However sometimes under-sensing of the pacemaker leads to fatal arrhythmia, one such being the R on T phenomenon. A PVC in by itself leads to impaired cardiac function leading to syncope or death. This phenomenon also leads to an increased risk of ventricular fibrillation (Vfib), as seen in our case report of a patient who had multi-vessel coronary artery disease (MVCAD) and had undergone three-vessel coronary artery bypass graft.

Case Presentation

A 71-year-old African American patient with past medical history of hypertension, hyperlipidemia, diabetes, CAD status post (s/p) percutaneous coronary intervention, atrial flutter s/p ablation, heart failure who was referred for MVCAD, severe mitral and tricuspid regurgitation. Recent left heart Cath (LHC) showed significant calcification of left anterior 70-80% with left circumflex 70-80% distal stenosis, right coronary patent proximal stent.

The patient was worked up for CABG and CTS was consulted. The patient eventually underwent 3 vessel CABG and presented to ICU level of care. No intra-op complications were noted and an epicardial pacemaker was left in place. On postoperative day 2, the patient was seen to be sitting in his chair and suddenly became unresponsive and telemetry recording strips showed R on T phenomenon which eventually precipitated polymorphic VT and Vfib. The patient was immediately coded and shocked a total of 5 times, he was also loaded with amiodarone for immediate rhythm correction, 2 ampules of epinephrine, and was then reintubated. Return of spontaneous circulation was achieved within 2 minutes of initiating CPR. The patient's immediate 12 lead EKG showed acute ST elevation where the vascular graft was thought to be the culprit. Cardiology was consulted. The patient was immediately shifted to the Cath lab and using Fick's diffusion method the patient's left ventricular ejection fraction (LVEF) was noted to be 15-20%. The patient appeared to be in cardiogenic shock , with poor left ventricular reserve s/p V.fib arrest secondary to R on T phenomenon. Surprisingly, when the patient underwent R/LHC, the graft was patent. Due to poor LVEF, an LVAD-Impella device was placed to assist his cardiac function along with ionotropic support. The patient recovered as expected and eventually two days later the impella was taken out, the patient off pressor support, and was extubated with the patient being hemodynamically stable. The patient was followed up with cardiology as an outpatient.



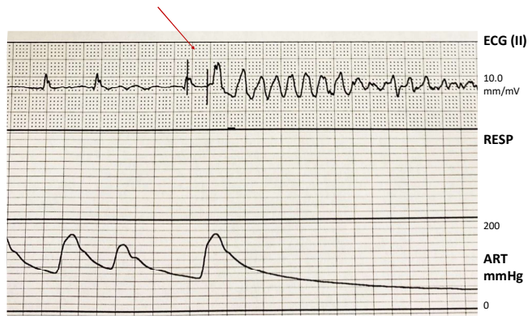


Figure 1 & 2. Above shows the simple explanation of R on T phenomenon(R on T Premature Ventricular Complexes (PVC) Simplified | ECGEDU.com). Below which is the 12 lead EKG recording of the patient, showing the PVC falling on T wave and leading to Polymorphic VT

Discussion

Like stated earlier an R on T phenomenon means that a QRS complex from a premature ventricular beat lands on the preceding T wave and sets off dangerous arrhythmia. The exact pathophysiology of PVC is unknown, and its causes are multifactorial. But when we go back to the action potential of a cardiac muscle, the ST and T wave line up at repolarization phase 1,2, and 3, and hence the timing of PVC is important. The PVC per se does not cause any re-entrant tachyarrhythmias as it needs 3 components- two pathways, one slower than the other, and a unidirectional block.

When these conditions are met, a PVC can cause re-entrant ventricular tachycardia (VT) and as such depends on various conditions like the patient's underlying cardiac condition, medications, electrical cardioversion, or placement of certain types of pacing wires, etc. Patients who are at risk should be carefully monitored during and after any medical intervention that has the potential to trigger the condition. Prevention of the iatrogenic cardiac R on T phenomenon requires proper risk assessment, careful patient selection, and appropriate dosing and timing of medications and interventions essential to minimize the risk of this potentially life-threatening condition.

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