May 16, 2024

ANNUAL RESEARCH DAY 2024

Tufts University | School of Medicine

BU

St. Elizabeth's Medical Center
A STEWARD FAMILY HOSPITAL
Steward

WELCOME TO RESEARCH DAY 2024

Dear Attendees,

Welcome to the Annual Research Day 2024 at St. Elizabeth's Medical Center and Carney Hospital. Today marks a celebration of inquiry and discovery, pivotal in shaping the future of medicine and enhancing patient care.

Research is a cornerstone of medical education, crucial for fostering a culture of innovation. Despite the challenges, our residents' engagement in research enriches their training, promoting evidence-based medicine and critical thinking, essential for lifelong learning and professional satisfaction.

We are privileged to have Dr. Tatsuo Kawai, a pioneer in organ transplantation, as our distinguished guest. His groundbreaking work offers new hope in medical science, inspiring us all.

Thank you to everyone involved in making this day possible. Your passion and dedication to excellence set the stage for a day of insightful presentations and groundbreaking discussions.

Let us embark on this journey of discovery together, fostering innovation and making a lasting impact on the world.

Sincerely,

Eduardo A Vega, MD

Chair of Research Day Committee

PROGRAM

7:00 - 7:30 a.m. **Welcome & Introduction – Seton Auditorium**

Eduardo A Vega, MD
Chair of Research Day Committee

7:35 - 8:15 a.m. **Keynote Speaker – Seton Auditorium**

Dr. Tatsuo Kawai, MD, Ph.D
Director, Legorreta Center for Clinical Transplant Tolerance, MGH
Professor of Surgery, Harvard Medical School
A. Benedict Cosimi Endowed Chair in Transplant Surgery, MGH

"Xenotransplantation from genetically modified pigs"

8:15 - 9:00 a.m. **Oral Presentations –Seton Auditorium**

Original Investigation (1st Place): 8:15 - 8:25 a.m.

Alexandria Byskosh, MD
Advancing Preclinical Modeling of Trauma and Immune Responses to Infection with "Dirty" Mouse Models

Original Investigation (2nd Place): 8:25 - 8:35 a.m.

Abhay Tyagi, MD
Safety and Efficacy of Regional Anesthesia Techniques for Shoulder Surgery: Network Meta-analysis of 46 Randomized Controlled Trials

Original Investigation (3rd Place): 8:35 - 8:45 a.m.

Elisa Caron, MD
Outcomes of Redo vs Primary Carotid Endarterectomy in the TCAR Era

Quality Improvement Report (1st Place): 8:45 - 8:50 a.m.

Waad Alrohily, PharmD
Impact of Pharmacy Interventions in Improving Surgical Prophylaxis Antimicrobial Selection and Administration Time

Clinical Vignette (1st Place): 8:50 - 8:55 a.m.

Hind El Naamani, MD
Gall Bladder Carcinoma Masquerading as Bouveret Syndrome as the Initial Presentation

9:00 - 9:30 a.m. **Introduction of the Alan B. Ashare Award**

Best Original Investigation completed through the IRB

Elie Naous, MD

Factors Associated with Prescription of SGLT2 Inhibitors among Adults with Chronic Kidney Disease in a Primary Care Setting: A Cross-sectional Analysis

Presentation of Certificates

9:30 – 12:00 p.m. **Poster Presentations (Authors present) – Seton Auditorium**

KEYNOTE SPEAKER

Dr. Tatsuo Kawai, MD., PhD

Director, Legorreta Center for Clinical Transplant Tolerance, MGH
Professor of Surgery, Harvard Medical School
A. Benedict Cosimi Endowed Chair in Transplant Surgery, MGH

His clinical and research interests are primarily focused on development of methods to induce immunological tolerance in organ transplantation. He was the first to report a consistent model for induction of renal allograft tolerance in nonhuman primates through a mixed chimerism approach. This and subsequent pre-clinical reports have extended this approach to the world's first clinical trials for induction of renal allograft tolerance in HLA mismatched kidney transplantation. This is a seminal achievement of a clinical protocol leading to the first reproducibly successful induction of renal allograft tolerance in humans and was reported in the New England Journal of Medicine in 2008 and 2013. He was awarded the Martin Research Prize at MGH in 2009 and the New Key Opinion Leader Award by the Transplantation Society in 2010 for this work.

Most recently, he was appointed an inaugural director of the MGH Legorreta Center for Clinical Transplantation Tolerance, which was built to become the world's leading center dedicated to preventing organ rejection after transplant surgery without the use of lifelong immunosuppression.

In the field of xenotransplantation, he has collaborated extensively with eGenesis over the past five years, achieving over two years of survival for genetically edited kidney xenografts in nonhuman primates, which was published in Nature in 2023. In March 2024, he successfully performed the world's first kidney xenotransplantation from the pig with 69 genomic edits in a living patient with end stage renal disease.

JUDGES PANEL

Lindsay Arnold, PharmD, BCPS

Dr. Lindsay Arnold is the Director of Pharmacy Services and the PGY1 Residency Program Director at St. Elizabeth's Medical Center in Boston, Massachusetts. Dr. Arnold received her Doctor of Pharmacy degree from Northeastern University in Boston, Massachusetts. She then completed her Pharmacy Practice Residency at the University of Nebraska Medical Center followed by an additional residency in Adult Internal Medicine with an emphasis in Cardiology at Virginia Commonwealth University. Dr. Arnold has also served as a clinical specialist in internal medicine, cardiology and anticoagulation. Her research and quality improvement interests include the impact of patient education on hospital readmission, specifically in heart failure and myocardial infarction, venous thromboembolism prevention and management and transitions of care. She serves a reviewer for Pharmacotherapy, Annals of Pharmacotherapy, Endocrine Practice and Cardiovascular Therapeutics

Dr. Arnold has been an invited speaker for several professional societies including American College of Clinical Pharmacy, American College of Cardiology, Massachusetts Association of Physician Assistants, Massachusetts Society of Health-System Pharmacists, and the Diabetes Technology Society. Dr. Arnold is actively involved ACCP, serving as a member and chair for numerous committees. She currently holds academic appointments at both Boston University School of Medicine and Tufts University School of Medicine.

Vaidyanathapuram S. Balakrishnan MBBS, MD, FRCP

Dr. Balakrishnan is an Associate Professor of Medicine at the Sackler School of Graduate Biomedical Sciences and Tufts University School of Medicine and serves as a faculty member in the Division of Nephrology at St Elizabeth's Medical Center since 2015. Dr. Balakrishnan is a graduate of the University of Madras Stanley Medical College in India and completed his internal medicine and nephrology training at several hospitals in the U.K and gained membership in the Royal College of Physicians of the United Kingdom (M.R.C.P., U.K.) before completing a three-year clinical and research fellowship in nephrology at Tufts Medical Center. Dr. Balakrishnan was previously a faculty member at Tufts Medical center where he held numerous titles including director of postgraduate education program in the Division of Nephrology and director of the Kidney and Dialysis Research Laboratory. Since 2006, he has been co-editor of the American Journal of Kidney Diseases. His research interests have been in the areas of inflammation, biocompatibility, and oxidative stress in hemodialysis, and genetic factors and mitochondrial DNA injury and function in CKD. His research has been funded by the NIH, National Kidney Foundation and other foundations and he has more than 60 publications to his credit.

Fred C Lam, MD PhD FRCSC

Dr. Fred Lam is a Canadian board certified neurosurgeon with a PhD in neuroscience. Dr. Lam obtained his neurosurgical fellowship training at Harvard Medical School specializing in tumors of the brain and spine. He performed postdoctoral research in cancer biology, DNA damage, and epigenetics at the Koch Institute for Integrative Cancer Research at MIT studying the use of nanotechnology and precision medicine approaches for the treatment of brain tumors. He is currently an attending neurosurgeon at Saint Elizabeth's Medical Center in Boston, Massachusetts, with a clinical and research focus on the neurosurgical treatment of patients with primary and metastatic brain and spine tumors.

Dr. Lam's research has been published in internationally recognized journals, including Nature, Science, Cancer Cell, Nature Communications, ACS Nano. Journal of Neurosurgery Spine and Operative Neurosurgery. He has contributed book chapters and reviews to peer-reviewed journals including Journal of Translational Genetics and Genomics, the Frontiers family of journals, and Neuro-Oncology Advances. He serves as a peer reviewer and guest editor for several international journals. Dr. Lam is an advocate of translational research bridging benchtop to bedside discoveries in order to improve outcomes for patients. He is also engaged in science education, public outreach

Jason Strauss, MD

Dr. Jason Strauss is the Chair and Chief of Psychiatry at St. Elizabeth's Medical Center. He graduated from Stony Brook School of Medicine. He completed an Adult Psychiatry Residency at the Harvard Longwood Psychiatry Training Program and Geriatric Psychiatry Fellowship at Cambridge Health Alliance. After training, Dr. Strauss worked at Beth Israel Deaconess Medical Center and Hebrew SeniorLife as a geriatric psychiatrist. He spent the last nine years at Cambridge Health Alliance, most recently as Director of Inpatient Psychiatry, Director of Geriatric Psychiatry, and Training Director of the Geriatric Psychiatry Fellowship. In addition to working with older adults, Dr. Strauss specializes in treating patients with severe and persistent mental illness (SPMI) and is focused on providing high quality, cost-effective care to underserved, vulnerable populations. He has piloted projects that have improved throughput from the Emergency Room to Inpatient Psychiatry and minimized polypharmacy, including benzodiazepines and antipsychotics in older adults with cognitive impairment. Dr. Strauss enjoys working with residents and students as well as collaborating with colleagues from all disciplines.

Nam Heui Kim, MD

Dr. Kim is a the most recent and anticipated addition to the surgical critical care team at St. Elizabeth's Medical Center. She serves as the Surgical Intensivist for the tertiary care center within the New England Steward Network. She completed her medical education at the Albert Einstein College of Medicine and obtained further training at St. Elizabeth's Medical Center for her residency in general surgery. She completed a research fellowship at the center for engineering medicine associated with MIT/Harvard/Shriners and then went on to specialize in Critical Care with a fellowship at the prestigious institution of Brigham and Women's Hospital. Following this, she developed skills in the treatments of burns in both the adult and pediatric populations with a fellowship in Burns at Massachusetts general hospital and Shriners for children. To complete her well rounded repertoire she completed an Acute Care and Trauma fellowship at Hartford Hospital in Connecticut. She has participated in research throughout her career and was an integral part of the research groups University of Massachusetts Memorial Critical Care Operations Group and AAST Ventilator-Associated Pneumonia Investigators publishing in JAMA.

Terrence Li, MD, FAAN

Dr. Terrence Li joined Steward Medical Group at St Elizabeth's Hospital after practicing clinical neurology at Advocate Medical Group in Chicago for 11 years. Dr. Li practices inpatient and outpatient general neurology, botulinum injections for chronic migraine, and incorporates clinical neurophysiology into his clinical practice including interpretation of electroencephalograms (EEG) and performing electromyography and nerve conduction studies (EMG and NCS). Dr. Li completed his medical school and neurology residency at SUNY Upstate Medical University and served as the chief resident in his final year of residency. He completed a clinical neurophysiology fellowship at University of Illinois at Chicago.

Dr. Li's other passion is medical education. He has had the pleasure of being the neurology clerkship director at Chicago Medical School for 6 ½ years and is the neurology clerkship director for Tufts University, site director for Tufts medical students at St Elizabeth's Hospital and is involved in the 2nd year neuroscience course at Tufts University. Dr. Li is looking forward to adding to the already solid foundation of the neurology clerkship with additional curricular materials including USMLE style shelf questions, PowerPoint presentations and podcasts. Dr. Li has enjoyed success in his clinical and medical education career. He recently was made a fellow of the American Academy of Neurology (FAAN), inducted into Alpha Omega Alpha (AOA) through Chicago Medical School, has won several awards at Chicago Medical School, including the Dean's Award for Excellence in Clinical Education and Champion Awards, and was awarded the Arnold P Gold Humanism and Teaching Excellence Award twice during his residency.

Michael Orlov MD. PhD

Dr. Michael Orlov has an MD and PhD Degrees from the Moscow Medical and Dental Academy. Dr. Orlov has completed his residency in Internal Medicine at the Beth Israel Medical Center in New York, Fellowships in Cardiovascular Diseases at the University of California Irvine and Clinical Cardiac Electrophysiology at the Massachusetts General Hospital. Dr. Orlov is currently a staff electrophysiologist at the Steward St. Elizabeth's Medical Center of Boston. He is the Fellowship Program Director in Clinical Cardiac Electrophysiology at the Steward St.Elizabeth's Medical Center of Boston, Professor of Medicine at Tufts Medical School and Adjunct Professor at Boston University Medical School. Dr. Orlov practices as an electrophysiologist and cardiologist. His research interests have encompassed newest imaging modalities for catheter ablation of arrhythmias and new applications of implantable cardiac rhythm management devices. More recently he has been focusing his efforts on conduction system pacing and new technologies and devices for this novel application. Dr. Orlov has been the Principal Investigator of several multicenter clinical trials; he has authored numerous publications, several monographs and book chapters in the field of Cardiac Electrophysiology, Pacing and Electrocardiography. He has been active in the humanitarian area providing specialized Cardiac Electrophysiology care on the African continent, other underserved areas and leading HRS efforts to deliver pacing equipment to conflict zones.

Chan Yeu Pu, MD, MS

Chan Yeu Pu MD, MS is a pulmonary critical care attending in Steward Health. He completed his internal medicine residency at John H. Stroger Hospital and obtained his Master of Science in clinical research at Rush University in Chicago, Illinois. He continued his fellowship training in pulmonary critical care in University at Buffalo, New York. His clinical and research interests are focused on thoracic oncology and bronchoscopy. He is also the Director of the Lung Cancer Screening Program.

David Warnock DO

Dr. David Warnock is an anesthesiologist in Boston, Massachusetts and is affiliated with St. Elizabeth's Medical Center-Brighton. He received his medical degree from University of New England College of Osteopathic Medicine and went on to complete his residency at St. Elizabeth's. He returned as staff and currently serves as the Associate Program Director of the anesthesiology residency program at St. Elizabeth's Medical Center.

FIRST AUTHORS OF WINNING ABSTRACTS OF ANNUAL RESEARCH DAY 2024

Alan B. Ashare Research Award

Elie Naous, MD

Factors Associated with Prescription of SGLT2 Inhibitors among Adults with Chronic Kidney Disease in a Primary Care Setting: A Cross-sectional Analysis

Original Investigation

1st Place ..... Alexandria Byskosh, MD
Advancing Preclinical Modeling of Trauma and Immune Responses to Infection with "Dirty" Mouse Models

2nd Place ..... Abhay Tyagi, MD
Safety and Efficacy of Regional Anesthesia Techniques for Shoulder Surgery: Network Meta-analysis of 46 Randomized Controlled Trials

3rd Place ..... Elisa Caron, MD
Outcomes of Redo vs Primary Carotid Endarterectomy in the TCAR Era

Quality Improvement Report

1st Place ..... Waad Alrohily, PharmD

Impact of Pharmacy Interventions in Improving Surgical Prophylaxis Antimicrobial Selection and Administration Time

2nd Place ..... Ibrahim Kamel MD, MHA

RxEase: Empowering Recovery through Bedside Medication Accessibility

3rd Place ..... Nicole Shalit, MD

QI Project Goal: To increase the adequacy of perioperative handoffs among anesthesia residents by implementing the IPASS bundle

Clinical Vignette

1st Place ..... Hind El Naamani, MD

Gall Bladder Carcinoma Masquerading as Bouveret Syndrome as the Initial Presentation

2nd Place ..... Mutaz Abualshar, MD

Fluid Overload-Associated Large B-Cell Lymphoma (FOLBCL) Mimicking Congestive Heart Failure in a Nonagenarian Patient A Case Report and Literature Review

3rd Place ..... Tobin Gramyk, MSc, with William Moore, MD, MSc

A Spicy Twist: Lingual Paresthesias and Gustatory Disturbances in Symptomatic Anemia Secondary to Severe B12 Deficiency

FIRST AUTHORS OF HONORABLE MENTIONS OF ANNUAL RESEARCH DAY 2024

Original Investigation

Andrew Crocker, MD

The Effect of Tumor Location on Patient Outcomes for Gastrointestinal Stromal Tumors in the Modern Era

Elisa Caron, MD

Optimal eGFR Cutoffs for risk of death or dialysis after Open and Endovascular Abdominal Aortic Aneurysm Repair

Elisa Caron, MD

Exploring Socioeconomic Disparities in Outcomes and Follow-up After Endovascular Treatment of Abdominal Aortic Aneurysms among Medicare Beneficiaries

Quality Improvement Report

Paolo Lopedote, MD

Less is More: A Quality Improvement Initiative Aimed at Reducing Blood Product Transfusion in Cirrhotic Patients Prior to Paracentesis

Maram Alenzi, MD

Improving Screening of Metabolic-Dysfunction Associated Liver Disease (MASLD) in Patients with Type 2 Diabetes Mellitus: A Quality Improvement Initiative

Natalya Asipenko, PharmD, BCPS, BCCCP, MD with Nikolay Korchemny, MD

Improving Anti-Seizure Medications Administration Time

Clinical Vignette

Surik Sedrakyan, MD

Unique case of triple trouble: Pembrolizumab associated myocarditis with myositis and seronegative myasthenia gravis

Maram Alenzi, MD

Bouveret Syndrome: A Rare Cause of Gastric Outlet Obstruction

Kahn Dmitry, MD

Pulmonary Artery Intimal Sarcoma: a rare case and literature review

ORIGINAL INVESTIGATIONS

Alan B. Ashare Research Award: Best Original Investigation completed through the St. Elizabeth's IRB

Factors Associated with Prescription of SGLT2 Inhibitors among Adults with Chronic Kidney Disease in a Primary Care Setting: A Cross-sectional Analysis

Elie Naous[1], Juliano Alhaddad[1], Mayssam El Najjar [1], Angela Achkar [1], Bertrand L. Jaber [1, 2]

[1]Department of Medicine, St. Elizabeth's Medical Center, Boston, MA, USA
[2]Division of Nephrology, St. Elizabeth's Medical Center, Boston, MA, USA

Background

Sodium–glucose cotransporter 2 (SGLT2) inhibitors are an emerging new class of drugs with pleiotropic effects and are the cornerstone for management of patients with type-2 diabetes mellitus (T2DM), chronic kidney disease (CKD), and heart failure. Along with blockers of the renin-angiotensin system, SGLT2 inhibitors have been shown to slow GFR decline and delay progression of CKD. Despite their proven benefit, SGLT2 inhibitors may be under prescribed in patients with CKD with and without T2DM.

Methods

We conducted a cross-sectional study to examine factors that are associated with the use of SGLT2 inhibitors among eligible adults with CKD in a primary care setting. We included adults (18 years and older), with CKD stages 3-4 and an eGFR of 20-59 mL/min/1.73m2 seen for a wellness/annual visit at the Adult Medicine Primary Care Clinic (Brighton Marine Health Center, Brighton, MA) from August 1st to November 20th, 2023. Data collection included demographic characteristics, insurance status, chronic conditions, medication prescriptions, and the most recent laboratory data of interest (recorded up to 12 months prior to the visit). Multivariable logistic regression analyses were performed to examine factors associated with the prescription of SGLT2 inhibitors. All the analyses were performed using the SPSS statistical analysis package. The study was approved by the Institutional Review Board (HW03-24).

Results

Our cohort included 209 adults attending the primary care clinic. Mean age was 78.8 years old and 56% were women. 40.2% had T2DM, 46% had cardiovascular disease, and 34.4% had heart failure. Mean hemoglobin A1c was 6.5%, and mean eGFR was 43.8 mL/min/1.73 m^2. Notably, 32% were not screened for proteinuria in the prior year, with 40.8% of screened patients exhibiting proteinuria. As shown in Table 1, SGLT2 inhibitors were prescribed in only 20% of eligible patients with CKD. The prescription rate was higher among patients with T2DM (40.5% vs. 6.4%; P<0.001), cardiovascular disease (28.9% vs. 12.5%; P=0.003) and heart failure (34.7% vs. 12.4%; P<0.001). Patients prescribed an SGLT2 inhibitor had a significantly higher mean hemoglobin A1c (7.4% vs. 6.3%; P<0.001) and serum creatinine (1.67 vs. 1.40 mg/dL; P<0.001), and a significantly lower eGFR (39.1 vs. 45.0 mL/min/1.73 m2; P=0.001).

In multivariable logistic regression analyses, factors independently associated with prescription of an SGLT2 inhibitor included the presence of T2DM (adjusted odds ratio [ORadj] 14.60; 95% confidence interval [CI] 5.41, 39.43; P<0.001), cardiovascular disease (ORadj 2.42; 95% CI 1.01, 5.75; P=0.046), and heart failure (ORadj 5.91; 95 % CI 2.17, 16.08; P<0.001), as well as lower age (ORadj 1.08; 95% CI 1.03, 1.13; P=0.001) and lower eGFR (ORadj 1.04; 95% CI 1.00, 1.09; P=0.047).

Conclusion

In a primary care setting, we found that SGLT2 inhibitors were prescribed in only 20% of eligible adults with CKD and their use was more common in patients with CKD in the presence of T2DM, cardiovascular disease, and heart failure. Primary care providers are the backbone of the health care system, and larger efforts are needed to identify and mitigate barriers to the prescription of SGLT2 inhibitors for eligible patients.

Variable	N	SGLT2 inhibitor prescription	
		Yes (N=42)	No (N=167)
Age, years	209	78.8 ± 11.0	81.7 ± 10.0
Body mass index, kg/m^2	209	30.3 ± 6.8	28.7 ± 5.7
Women	209	22 (52.4)	95 (56.9)
Race/ethnicity	192		
White		28 (71.8)	123 (80.4)
Black		3 (7.7)	7 (4.6)
Other		8 (20.5)	23 (15.0)
Health insurance type	209		
Medicare		19 (45.2)	83 (49.7)
Medicaid		1 (2.4)	3 (1.8)
Commercial		22 (52.4)	81 (48.5)
CKD stage	209		
Stage 3 (30-59 mL/min/1.73 m^2)		31 (73.8)	154 (92.2)
Stage 4 (20-29 mL/min/1.73 m^2)		11 (26.2)	13 (7.8)
Hypertension	195	41 (97.6)	154 (92.2)
Hyperlipidemia	189	38 (90.5)	151 (90.4)
Cardiovascular disease†	97	28 (66.7)	69 (41.3)
Heart failure	72	25 (59.5)	47 (28.1)
Type-2 diabetes mellitus	84	34 (81.0)	50 (29.9)
Hemoglobin A1c, %	135	7.38 ± 1.43	6.25 ± 1.02
Serum creatinine, mg/dL	209	1.67 ± 0.44	1.40 ± 0.39
eGFR, mL/min/1.73m^2	209	39.1 ± 11	45.0 ± 10.0
Presence of proteinuria	58	16 (44.4)	42 (39.6)
Use of medications			
RAS blocking agent**	134	31 (73.8)	103 (61.7)
Mineralocorticoid receptor antagonist	25	10 (23.8)	15 (9.0)
Dual RAS blocking agents	17	7 (16.7)	10 (6.0)
Glucagon-like peptide-1 receptor agonist	19	9 (21.4)	10 (6.0)

The continuous variables are displayed as mean ± standard deviation, and the binary variables as count (wi comparisons were analyzed using the Pearson Chi-Square test (for categorical variables) and Mann-Whitney variables). ** Use of an angiotensin converting enzyme inhibitor, an angiotensin-II receptor blocker, or Defined by the presence of coronary artery disease, peripheral vascular disease, or stroke (including transient renin-angiotensin system; CKD, chronic kidney disease; eGFR: estimated glomerular filtration rate.

Table 1. Characteristics of the cohort stratified by SGLT2 inhibitor prescription status.

Winner: 1st Place

Advancing Preclinical Modeling of Trauma and Immune Responses to Infection with "Dirty" Mouse Models

Alexandria Byskosh[1,2] MD, Bailin Niu[1] MD, Ekaterina Murzin[1] BS, John Pulford[1] BS, Daniel Younger[1] PhD, James Lederer[1] PhD

[1]Brigham and Women's Hospital, Harvard Medical School
[2]Division of Surgery, St. Elizabeth's Medical Center, Boston, MA, USA

Background

Trauma induces an immune response resulting in increased susceptibility to infections. Current trauma immunology research uses specific-pathogen-free (SPF) mice. "Dirty" or natural immune (NI) mice more accurately mimic human immune systems and may present a more translatable model for studying trauma. CpG-DNA, a TLR-9 agonist, has been shown to improve immune recovery in response to trauma. We aimed to 1) characterize baseline differences in blood and bone marrow (BM) responses between SPF and NI mice, 2) evaluate differences in immune responses to infection following trauma, and 3) explore effects of CpG-DNA on immune recovery.

Methods

SPF(n=58) and NI(n=40) C57BL6 mice underwent sham or burn injury under anesthesia with our IACUC-approved protocol. Mice were injected with CpG-DNA or GpC-DNA (control) 24h post-injury. 20 SPF and 20 NI mice were intranasally infected with P. aeruginosa 24h following injection. Blood and BM cells were prepared 48h post-treatment or 24h post-infection for phenotyping by CyTOF mass cytometry or flow cytometry. Computational approaches were used to measure changes in abundance and phenotypes of peripheral immune cells and BM stem and progenitor cells. One-way ANOVA was used for statistical analysis with $p<0.05$.

Results

In uninfected mice, NI mice had more neutrophils and monocytes and less NK cells. Burn injury decreased CD4+ and CD8+ T cells, NK cells, and B cells in SPF mice. With infection, NI mice had less T cells and more B cells across all conditions while uninjured SPF mice had more neutrophils. Burn injury induced a greater neutrophil response in NI mice (Fig.1). Monocytes increased with CpG-DNA in sham NI mice. In the BM, with and without infection, sham and burn NI mice had overall more hematopoietic and mesenchymal stem cells (MSCs), except for Long-Term Repopulating Hematopoietic Stem Cells (LT-HSCs) (Fig.2). CpG-DNA increased LT-HSCs in both uninfected SPF and NI mice. In infected mice, CpG-DNA had a greater effect in sham SPF mice, but increased MSCs in sham and burn NI mice.

Limitations

NI and SPF mice were housed in separate facilities and while efforts were made to maintain consistent conditions, variations related to housing may still exist. Additionally, blood and BM samples were collected at specific time points post-treatment or post-infection, potentially limiting the ability to capture dynamic changes in immune cell populations over time and missing important fluctuations in immune response dynamics. Lastly, this study focused on

infection with P. aeruginosa, representing only one pathogen, and thus the findings may not be generalizable to other infectious agents.

Conclusions

NI mice demonstrated more robust "trained" immune systems with less burn trauma loss of blood immune cells compared to SPF mice. These findings suggest NI mice may represent immune phenotypes more similar to humans and may be a more translatable model for traumatic injury. CpG-DNA treatment showed increases in hematopoiesis in both SPF and NI mice indicating improved immune recovery. In moving this research towards clinical use, we plan to compare our findings to blood samples from trauma patients and study peripheral immune phenotypes in response to ex-vivo bacterial and CpG-DNA stimulation.

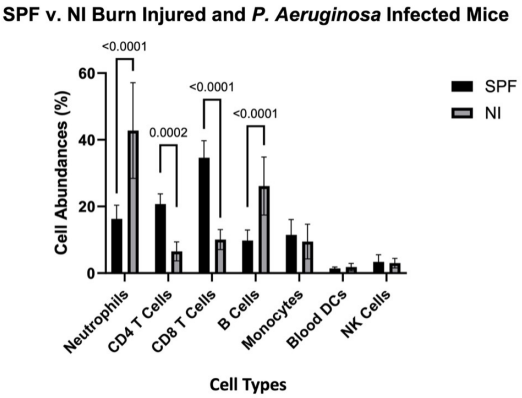

Figure 1. Peripheral blood immune cell abundances in SPF versus NI burn injured and P. Aeruginosa infected mice. DCs=Dendritic Cells. NK=Natural Killer.

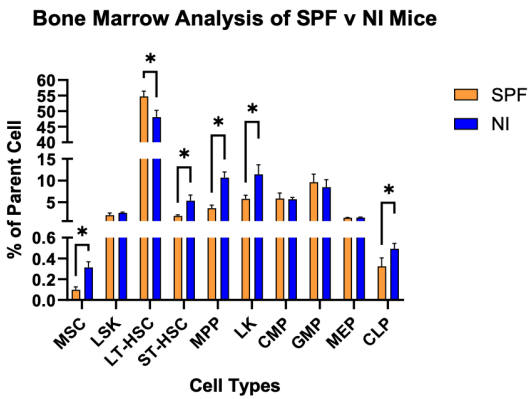

*Figure 2. Bone marrow analysis of uninfected SPF and NI sham mice by percent of parent cell. MSC=Mesenchymal Stromal Cells; LSK=Lineage(-)Sca-1(+)c-Kit(-) Cells; LT-HSC=Long-Term Repopulating Hematopoietic Stem Cells; ST-HSC=Short-Term Repopulating Hematopoietic Stem Cells; MPP=Multi-Potent Progenitor Cells; LK=Lineage(-)c-Kit(+)Sca-1(-); CMP=Common Myeloid Progenitor Cells; GMP=Granulocyte-Monocyte Progenitor Cells; MEP=Megakaryocyte-Erythrocyte Progenitor Cells; CLP=Common Lymphoid Progenitor Cells; *= p<0.001.*

Winner: 2nd Place

Safety and Efficacy of Regional Anesthesia Techniques for Shoulder Surgery: Network Meta-analysis of 46 Randomized Controlled Trials

Authors: Abhay Tyagi, Yunhee Kim, Angelina Mavropoulos, Preet Mohinder Singh
Department of Anaesthesiology, St. Elizabeth's Medical Center, Brighton MA

Introduction

Shoulder surgery is one of the most commonly performed and among the most painful orthopedic procedures. Interscalene brachial plexus blockade (ISB) is the standard regional anesthesia technique for shoulder surgery due to its wide dermatomal coverage and superior patient satisfaction. However, unintended phrenic nerve block and consequential hemidiaphragmatic paralysis (HDP) is almost always associated with ISB and can cause significant respiratory impairments in high risk populations such as those with COPD, pre-existing diaphragmatic palsy and morbidly obese. In the recent decade, efforts have been made to mitigate this with newer blocks that avoid phrenic nerve involvement while achieving comparable efficacy to ISB. However, there is no clear consensus for which of these are superior in terms of preventing HDP and be as efficacious as ISB.

Methods

The meta-analysis protocol was prospectively registered on the PROSPERO database (CRD42024500213). We did not seek IRB approval for this study since no patients were recruited at this institution. We included single shot nerve blocks with local anesthetics (LA) with or without epinephrine or adjuvants, but no liposomal formulations. We conducted systematic literature search with relevant keywords on the PUBMD MDINE, EMBASE and Cochrane databases to screen 273 RCT's that were manually searched to finally include 46 RCT's. The primary outcome was the incidence of HDP. Secondary outcomes included postoperative pain scores on immediate arrival to PACU and 24 hours after surgery, cumulative postoperative 24h opioid consumption in oral morphine milligrams equivalents. The meta-analysis was performed using Bayesian statistics (random-effects model) using "Gemtc" package for R for data analysis. The pairwise relation between each treatment group was represented in a graphical network form. (Figure 1) Individual effect sizes were reported using league tables and treatment preference order was evaluated using SUCRA plots and forest plot (Figure 2a and 2b). The Confidence in Network Meta-Analysis (CINeMA) approach was used to evaluate the overall evidence quality.

Results:

We compared 11 nerve blocks and their combinations as well as Intra-articular and periarticular LA infiltration in 46 randomised controlled trials recruiting a total of 3625 patients. The probability of HDP was lowest with suprascapular block from posterior approach in combination with Infraclavicular block (Post. SSNB+ ICB). The probability rankings from the least to most likely to cause HDP are shown in Figure 2 and the quality of evidence is categorized as high. In terms of efficacy measured by 24 h opioid consumption, anterior suprascapular nerve block with or without infraclavicular nerve block (antSSNB, antSSNB+ICB) and superior trunk block

(STB) were superior to ISB. However, a significant heterogeneity in pooled RCT's with regards to post op analgesic regimen such as choice of individual opioids and their set dosing (PCA vs NRS guided rescue medications vs. NSAIDs only regimens) as well as setting (ambulatory vs inpatient) limits our confidence in this estimate to low.

Conclusion:

This network meta-analysis is the first to provide an unbiased, data driven method to identify Post. SSNB+ ICB as the best available technique to prevent HDP when providing shoulder anesthesia. Our probability rankings for HDP further help clinicians to make the right choice depending on their familiarity with the abovementioned regional techniques.

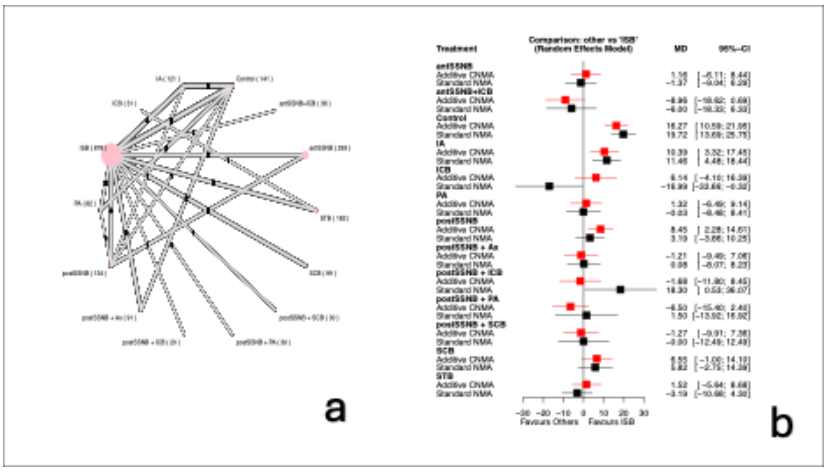

Figure 1a. Network geometry with each block depicted by a node and the number of patients for each block in parenthesis and the thickness of the connecting lines depicted by number of direct comparisons. 1b. Forest plot of a component and standard NMA, measuring interaction between components of combination blocks.

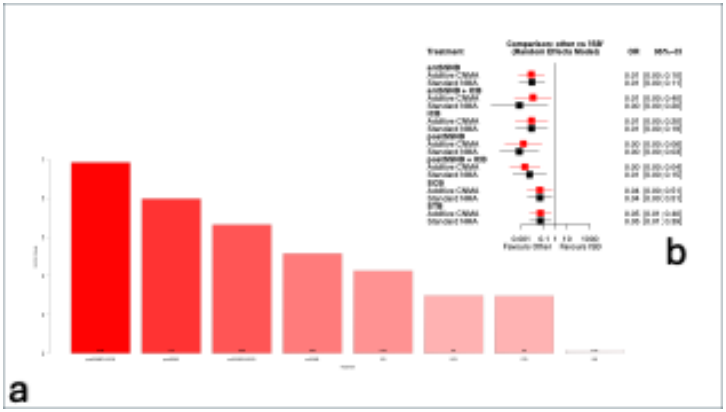

Figure 2a. Surface under the cumulative ranking curve (SUCRA) plot for probability of HDP, with higher score implying lower likelihood. SSNB, suprascapular nerve block; ant, anterior; post, posterior; STB, superior trunk block; SCB, supraclavicular block; ICB Infraclavicular block

Winner: 3rd Place

Outcomes of Redo vs Primary Carotid Endarterectomy in the TCAR Era

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Background

Outcomes following Redo-CEA (rCEA) have been shown to be worse than those after primary CEA (pCEA). Additional research has shown that outcomes are better with TCAR for restenosis after CEA compared with rCEA and tfCAS, however some patients are not eligible for TCAR or tfCAS. Given the increasing utilization of endovascular techniques, this study aims to evaluate changes in outcomes of rCEA vs pCEA before and after the approval of TCAR by the FDA in 2015.

Methods

All patients between 2003-2023 who underwent CEA in the VQI were included and categorized as pCEA or rCEA. The Cochrane-Armitage trend testing was used to examine trends in proportion of rCEA compared to pCEA, and Mann-Kendall trend test for perioperative outcomes following rCEA overtime. Multivariable logistic regression analysis was used to compare in-hospital stroke/death, in-hospital stroke, death, and stroke/death/MI following rCEA versus pCEA after stratifying patients into two cohorts: 2003-2015 and 2016-2023 (before and after introduction of TCAR). Subgroup analysis was performed in symptomatic and asymptomatic patients within both time cohorts.

Results

Of 198,150 patients undergoing CEA, 98.4% were pCEA and 1.6% were rCEA. During the study period the proportion of rCEA in the VQI decreased from 2.3% to 1.0% as endovascular methods became more available (p<.001,Figure I). Trend testing of individual outcomes showed an increase in the stroke/death rate following rCEA over time (p=.019,Figure I) despite an improvement in the death rate. Interestingly while CNI remained higher for rCEA vs pCEA overall, the proportion of CNI decreased overtime(p=.001). A similar pattern was observed with length of stay.

From 2003-2015 patients undergoing rCEA had higher odds of stroke/death compared to

pCEA (2.4%vs1.2%, aOR1.81[1.14,2.73],p=.007). A subgroup analysis showed that the difference in stroke/death rates persisted only in asymptomatic patients (2.3%vs1.1%, aOR 2.03[1.19,3.25],p=.006), however there was no difference in symptomatic patients (3%vs2. 0%,aOR1.37[0.51,3.01],p=.50). In the post TCAR period from 2016-2023 patients undergoing rCEA had higher odds of stroke/death compared to pCEA (3.1%vs1.3%,aOR2.45[1.85,3 .18],p<.001), and the association was similar in asymptomatic patients (1.9%vs1.0%, aOR-1.95[1.29,2.82],p<.001), and larger in symptomatic patients (6.3%vs2.0%,aOR3.23[2.17,4.6 4],p<.001).

Conclusions

The proportion of redo-CEAs done yearly in the USA has been decreasing as endovascular options became available. As the rate of rCEA has decreased, outcomes have been worsening, with increasing stroke/death rate seen over time, driven primarily by worse outcomes in symptomatic patients. With a stroke death rate of over 6% these patients are unlikely to benefit from rCEA and would be better served with TCAR or tfCAS if eligible or aggressive medical management.

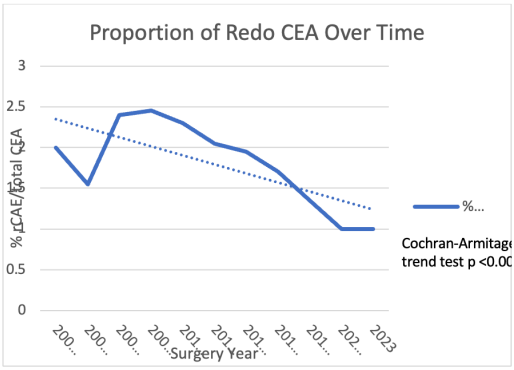

Figure I: Proportion of Redo CEA over Time

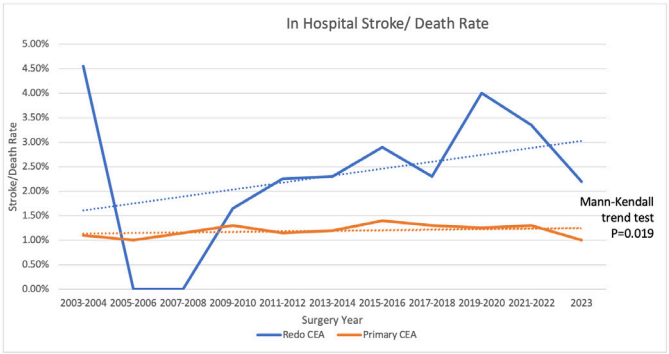

Figure II: Trends in Hospital Stroke/Death Rate in Primary vs Redo CEA

Honorable Mention

Optimal eGFR Cutoffs for risk of death or dialysis after Open and Endovascular Abdominal Aortic Aneurysm Repair

Authors: Elisa Caron, MD1,2; Sai Divya Yadavalli, MD1; Roger B. Davis, ScD1; Mark Conrad, MD2, Virendra Patel, MD3; Marc L. Schermerhorn, MD1

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OBJECTIVE:

Chronic kidney disease (CKD) is known to increase morbidity and mortality for both open and endovascular repair of AAA. However, a binary classification of estimated glomerular filtration rate (eGFR) < 60 may not be the optimal cutoff.

METHODS:

Vascular Quality Initiative (VQI) databases for intact, first-time Open Aneurysm repair (OAR) and EVAR were analyzed from 2013-2023 and divided into cohorts based on eGFR (≥60, 45-59, 30-44, <30 ml/min/1.73m2). Chi-square and linear regression analysis were used to compare perioperative mortality and rates of requiring permanent hemodialysis (HD), with eGFR ≥60 cohort as the reference. A Linear Regression model with a restricted cubic spline configuration, was used to provide a visual representation of the relationship between eGFR and predicted perioperative mortality. (Figure 1)

RESULTS:

Compared to patients with eGFR ≥60, patients with eGRF 45-59 had similar adjusted odds of mortality for both OAR and EVAR (OAR: 4.9% vs 3.1%, aOR 1.1[95% CI 0.81,1.49];p>0.05 and EVAR: 1.0% vs 0.8%, aOR 1.01 [0.79, 1.28];p>0.9). Those in the 30-44 group demonstrated increased odds of mortality (OAR: 6.6%, aOR 1.3[0.92,1.81]; p=0.12, EVAR: 1.7%,1.35[1.05,1.72];p= 0.015), and patients with eGFR <30 demonstrated the highest odds of mortality at (OAR: 3.4% aOR 2.26[1.54,3.25];p<0.001, EVAR: 11.5%, aOR 2.3[1.78,2.97];p<.001).

Permanent dialysis requirement followed a similar trend with odds of permanent dialysis increasing as eGFR decreased. Compared to the >60 group, those in the eGFR 45-59 group had similar rates of permanent HD, (OAR, 1.3% vs 0.8%, aOR 1.49, [0.82,2.61]; P=0.2; EVAR: 0.1% vs 0.1%, aOR 1.09[0.39,2.58];p=0.2). Patients in the 30-44 group showed a small change in dialysis requirement, (OAR: 1.1%. aOR1.18[0.53-2.39]; p=0.7,EVAR: 0.3%, aOR 3.59[1.73-7.24]; p<.001). As with perioperative mortality greatest differences were seen in the <30 group (OAR: 4.2% aOR 4.14[2.15, 7.62] p<0.001, EVAR: 1.5%, aOR 18.1[10.1,33.1];

p<.001) further highlighting the significant variation in outcomes among patients with eGFR <60.

CONCLUSIONS:

Rather than a binary eGFR cutoff of <60 to stratify patient risk after AAA repair, a better understanding of perioperative risk may be achieved by stratifying into 3 groups of 45-59, 30-44, and <30.

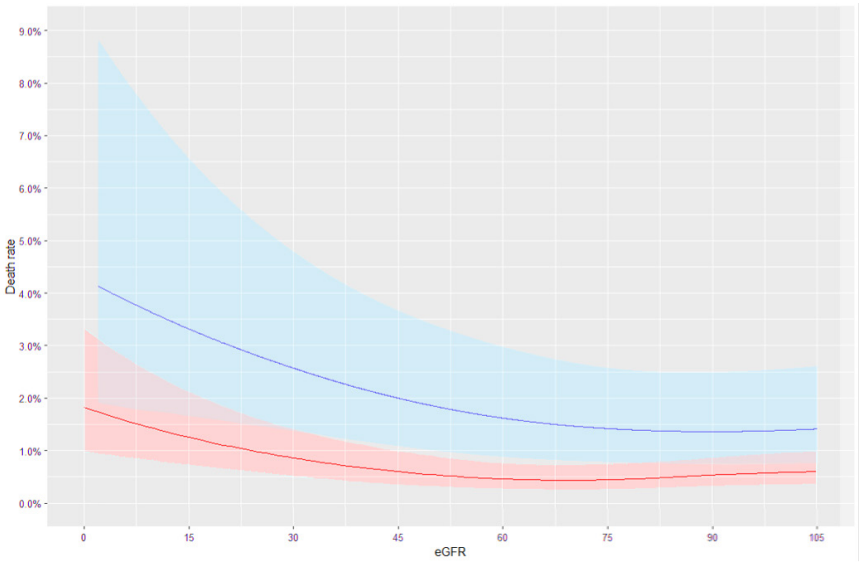

Figure 1: Predicted perioperative Mortality by eGFR in OAR and EVAR

**Adjusted for age, sex, hypertension, diabetes, COPD, CHF, Anemia, smoking, and medication use: ASA, statin, Beta blocker, and ACE/ARB*

Table 1: Perioperative Death and permanent HD requirements following EVAR and OAR

Perioperative	EVAR				OAR			
eGFR	Rate	aOR[1]	95% CI[1]	p-value	Rate	aOR[1]	95% CI[1]	p-value
>60	0.80%	ref	ref	ref	3.10%	ref	ref	ref
<60->45	1.00%	1.01	0.79, 1.28	>0.9	4.90%	1.1	0.81, 1.49	0.5
<45->30	1.70%	1.35	1.05, 1.72	0.015	6.60%	1.3	0.92, 1.81	0.12
<30	3.40%	2.3	1.78, 2.97	<0.001	11.50%	2.26	1.54, 3.25	<0.001
HD	4.50%	3.29	2.05, 5.07	<0.001	11.10%	3.67	1.03, 10.2	0.023
Permanent HD								
>60	0.10%	ref	ref	ref	0.80%	ref	ref	ref
<60->45	0.10%	1.09	0.39, 2.58	0.9	1.30%	1.49	0.82, 2.61	0.2
<45->30	0.30%	3.59	1.73, 7.24	<0.001	1.10%	1.18	0.53, 2.39	0.7
<30	1.50%	18.1	10.1, 33.1	<0.001	4.20%	4.14	2.15, 7.62	<0.001

**Adjusted for age, sex, hypertension, diabetes, COPD, CHF, Anemia, smoking, and medication use: ASA, statin, Beta blocker, and ACE/ARB*

Honorable Mention

The Effect of Tumor Location on Patient Outcomes for Gastrointestinal Stromal Tumors in the Modern Era

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Background:

Few modern studies have focused on the impact of location on clinical outcomes for gastrointestinal stromal tumors (GIST), which are found throughout the gastrointestinal tract. Therefore, this study aims to characterize the effect of GIST location and other high risk tumor features on patient outcomes and survival.

Methods:

Patients with non-metastatic GIST who underwent surgical resection from 2010-2022 met inclusion criteria. Variables were compared by primary location including stomach, small intestine, colorectal, and esophagus. Tumor size was subdivided into three groups, tumors of ≤5 cm, 5-10 cm or >10 cm at diagnosis. Similarly, mitotic activity was subdivided into GIST with ≤5, 5-10, and >10 mitoses per 50 high powered fields (m/50 hpf) on pathologic analysis. Multivariate log-rank tests were used to associate recurrence free survival (RFS) with categorical covariates using stomach location, tumor size <5 cm at diagnosis, and mitotic rate < 5 m/50 hpf as controls. All research activities were performed after IRB approval and in accordance with IRB research practice guidelines.

Results:

As shown in Table 1, among the 178 patients included in this analysis most had tumors of the stomach (51.7%), followed by small intestines (38.8%), colorectal (7.3%) and esophageal masses (2.2%). While our cohort was predominately Caucasian, race was significantly associated with tumor location (p=0.007). As shown in Figure 1, on multivariate analysis tumors of the small intestine were associated with inferior RFS relative to stomach masses (p=0.05). Though there was no correlation with colorectal masses (p=0.74). Increasing tumor size demonstrated inferior RFS for tumors 5-10 cm (p=0.026) and >10 cm at diagnosis (p<0.005). Similarly, with increasing mitotic count there were stronger associations with RFS for 5-10 m/50 hpf (p=0.08) and >10 m/50 hpf (p<0.005).

Limitations:

This study is limited by the relatively low number of colorectal and esophageal tumors in our cohort, to such a degree that esophageal tumors were not able to be included in multivariate analyses. Though this limitation also reflects the rarity of GIST tumors in this location.

Conclusion:

In this analysis tumors of the small intestines demonstrated an association with inferior RFS when compared to gastric GIST. As in prior investigations, larger and more mitotically active GIST continues to demonstrate a strong association with inferior survival outcomes. Additional investigation into the patterns of systemic therapy use by tumor location is needed to better understand how these treatment options may benefit GIST patients with high-risk tumor traits.

	Stomach		Small Intestine		Colorectal		Esophagus		p-value
	n=92	51.7%	n=69	38.8%	n=13	7.3%	n=4	2.2%	
Sex									p=0.98
Female	35	38.0%	26	37.7%	4	30.1%	1	25%	
Race									p=0.007
Caucasian	66	71.7%	58	84.1%	9	69.2%	4	100%	
Black	17	18.4%	2	2.9%	2	15.4%	0	0%	
Hispanic	0	0%	3	4.3%	2	15.4%	0	0%	
Other	9	9.9%	6	8.7%	0	0%	0	0%	
Tumor Size at Diagnosis									p=0.06
<5 cm	48	52.2%	26	37.7%	7	53.8%	3	75%	
5-10 cm	28	30.4%	33	47.8%	2	15.4%	0	0%	
>10 cm	16	17.4%	10	14.5%	4	30.8%	1	25%	
Mitoses per 50 hpf									p=0.28
<5	56	64.4%	43	62.3%	6	50.0%	2	100%	
5-10	20	23.0%	17	24.6%	1	8.3%	0	0%	
>10	11	12.6%	9	13.1%	5	41.7%	0	0%	
Margin Status									p<0.005
R0	89	97.8%	67	97.1%	8	66.7%	4	100%	
R1	2	2.2%	2	2.9%	4	33.3%	0	0%	
Neoadjuvant Therapy									p=0.38
Yes	20	21.7%	7	10.1%	4	30.8%	2	50%	
Adjuvant Therapy									p<0.005
Yes	33	35.8%	51	73.9%	7	53.8%	1	25%	
Recurrence									p=0.19
Yes	11	12.0%	16	23.2%	3	23.1%	0	0%	

Table 1: Demographic and Treatment Characteristics by Tumor Location

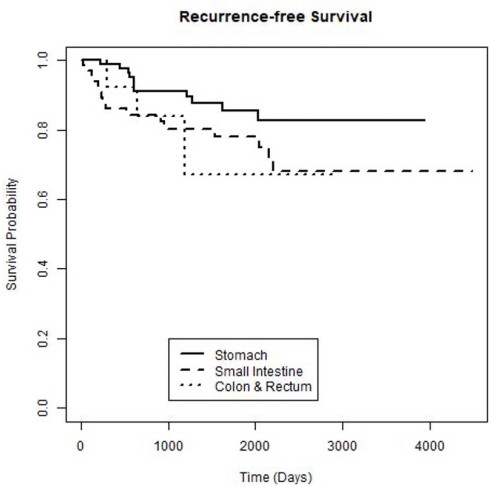

Figure 1: KM Plot Recurrence-Free Survival by Tumor Location

Honorable Mention

Exploring Socioeconomic Disparities in Outcomes and Follow-up After Endovascular Treatment of Abdominal Aortic Aneurysms among Medicare Beneficiaries

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[3]Center for Devices and Radiological Health, Food and Drug Administration, Silver Spring, MD

Background

Socioeconomic disparities are known to contribute to adverse outcomes after surgery; however, the role of individual wealth and neighborhood environment on both follow-up and outcomes following EVAR are not well understood.

Methods

All fee-for-service Medicare beneficiaries ≥66 years who underwent infrarenal EVAR for intact AAA from 2011-2019 were included. Patients were divided into cohorts using dual enrollment in Medicare/Medicaid as a measure of individual wealth, and residence in a distressed community as a measure of regional wealth (as defined by the Distressed Community Index, DCI). The primary outcome was the composite of late aneurysm rupture, aortic reintervention, conversion to open repair, or all-cause mortality at 5 years. Cumulative incidence of the primary composite outcome was determined using Kaplan Meier methods.

Results

Among 111,381 patients who underwent EVAR, 9,991 (9.0%) were dual enrolled in Medicare/Medicaid, and 22,902 (20.6%) were living in distressed communities. A higher incidence of the primary outcome was observed in dual-enrolled vs Medicare-only patients (55.9%vs43.6%, HR1.44[1.39,1.48],) and in those living in distressed vs non-distressed communities (46.9%vs 44.2%,HR1.10[1.07,1.13]). After adjustment for comorbidities and other disparities, the association between dual enrollment or DCI and the primary outcome was attenuated but remained significant (HR1.18[1.14,1.21]), (HR1.03[1.00,1.05]Figure1). In addition, both dual enrolled and distressed patients had lower rates of EVAR related office visit or AAA related imaging in follow-up, and higher rates of emergency visits.

Conclusion

Among Medicare beneficiaries who underwent EVAR for AAA, those who were socioeconomically disadvantaged had a higher incidence of the primary composite outcome, driven primarily by high all-cause mortality. These disparities seem to be driven, in part, by a higher comorbidity burden, and by less EVAR specific follow-up in patients who are socioeconomically disadvantaged. This study highlights the need for interventions targeted at improving access to appropriate disease surveillance and management of comorbidities for patients who are most vulnerable.

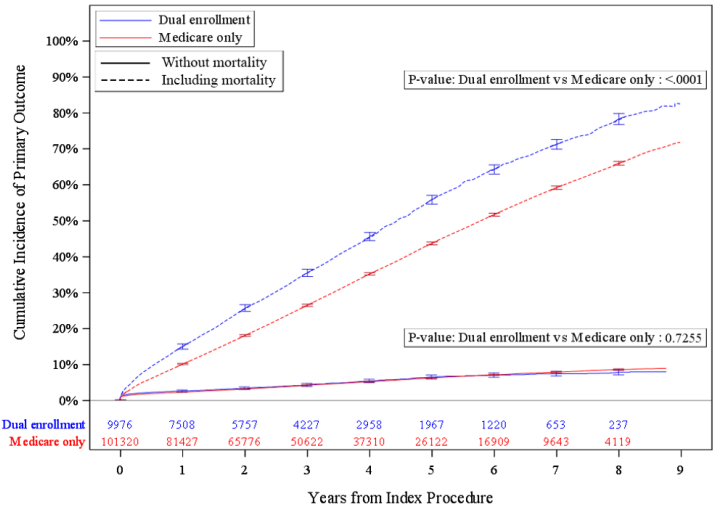

Figure 1: Unadjusted cumulative incidence of composite late aneurysm rupture, aortic reintervention, conversion to open repair with and without mortality after EVAR for intact AAA, stratified by dual enrollment status.

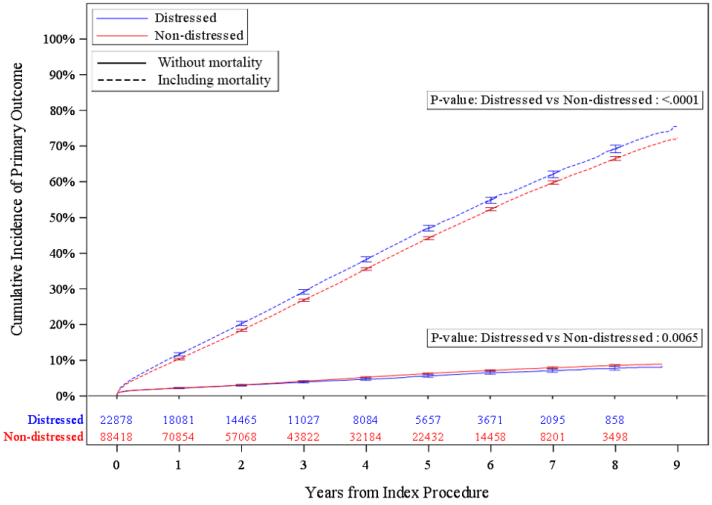

Figure 2: Unadjusted cumulative incidence of composite late aneurysm rupture, aortic reintervention, conversion to open repair, with and without mortality after EVAR for intact AAA, stratified by Distressed Communities Index.

Efficacy of Angiotensin-Converting Enzyme Inhibitors in Coronary Microvascular Dysfunction: A Systematic Review and Meta-Analysis of Randomized Clinical Trials

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Background

Coronary Microvascular Dysfunction (CMD) presents a significant clinical challenge, often resulting in angina symptoms despite the absence of notable epicardial coronary artery disease. However, emerging evidence hints at the potential of Angiotensin-Converting Enzyme Inhibitors (ACEIs) to address this issue by enhancing coronary microvascular function and managing symptoms in CMD patients. Through a comprehensive meta-analysis, we aimed to assess the efficacy of ACEIs in several domains. Firstly, we evaluated their clinical impact on improving coronary flow reserve (CFR) and alleviating symptom burden among CMD patients. Additionally, we examined the effects of ACEIs on reducing both chest pain episodes and systolic blood pressure in this patient population. Furthermore, our analysis delved into the underlying mechanisms that could elucidate the therapeutic properties of ACEIs in managing CMD, thereby providing valuable insights for more targeted and effective interventions in this challenging condition.

Methods

- Comprehensive literature search conducted on PubMed, Embase, and Cochrane Library.
- Inclusion criteria: randomized controlled trials assessing the effects of ACEIs in CMD patients.
- Risk of bias was assessed using Cochrane Collaboration's tool.
- Data synthesis was performed using Review Manager software.

Results

- Five studies were included in the meta-analysis, comprising 209 patients.
- Statistically significant improvement in coronary flow reserve (CFR) was observed in the ACEIs group compared to the placebo group (MD -0.3, 95% CI -0.61 to 0.01, P = 0.05).
- No significant difference was observed in the chest pain episodes (MD: 1.79, 95% CI: -3.99-7.58, p=0.54) or systolic blood pressure (MD: -4.02, 95% CI: -11.28-3.25, p=0.28).
- Heterogeneity was observed among studies for chest pain episodes (I2=98%) but not for CFR or systolic blood pressure.

Limitations

Small sample size, short follow-up, hindering statistical analyses. Many participants lacked classic angina, and study designs varied, affecting intervention efficacy assessment. Diverse CFR evaluation methods and substantial study variability complicate drawing conclusions. Differences in concomitant drugs make attributing outcomes solely to ACEIs difficult. ACEIs' primary epicardial vasodilation may limit microvascular spasm impact. Inconsistent CMD criteria affect patient inclusion. Despite limitations, this meta-analysis offers a comprehensive assessment of ACEIs in CMD, a relatively unexplored area.

Conclusions

The appropriate treatment for CMD is a source of contention because adequate data is lacking. Our findings suggest that ACEIs may have a positive effect on improving CFR in patients with microvascular angina. However, ACEIs did not demonstrate a significant impact on the number of chest pain episodes or systolic blood pressure in this patient population. Further research, including RCTs with larger sample sizes and longer follow-up durations, is warranted to provide more conclusive evidence on the role of ACEIs in CMD management.

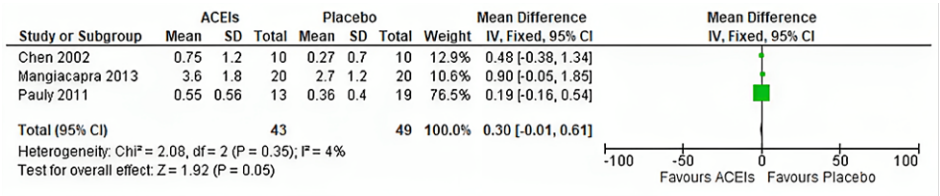

Figure 1: Forest plot of mean difference of change in CFR

Description: The pooled analysis of the three studies assessing the effect of ACEIs on CFR yielded a mean difference (MD) of 0.30 with a 95% confidence interval (CI) of (-0.01-0.61) and a p-value of 0.05

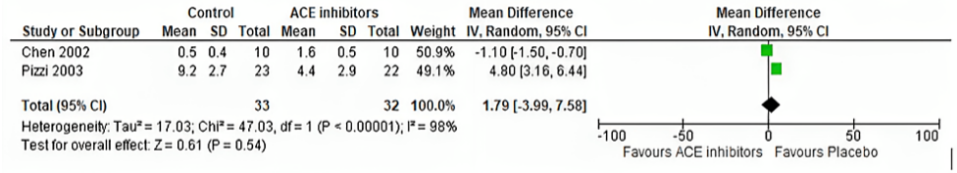

Figure 2: Forest Plot of Number of Chest Pain Episodes

Description: Two studies contributed to this outcome. There is no statistically significant difference in the number of chest pain episodes between the ACEIs group and placebo group [MD 1.79, 95 % CI (-3.99-7.58), P = 0.54; the pooled studies were heterogeneous (P = < 0.00001; I2 = 98 %)

Correlation of Bruxism symptoms and Sino-nasal symptoms after upper airway surgery in adults and children

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Background

Bruxism is a non-functional activity characterized by repeated teeth grinding or clenching in an unconscious manner. It can occur in all age ranges and in both genders. It is hypothesized that when an upper airway becomes obstructed, the muscles in the mouth move to try and reopen the blocked airway. It is believed that nasal obstruction may indirectly have a preemptive and therapeutic effect on sleep bruxism by causing mouth breathing. The aim of the study is to determine if patients with nasal obstruction and bruxism undergoing upper airway surgery will have an improvement in bruxism after the surgery and if the improvement in bruxism symptoms correlates with the noted improvement in nasal symptoms.

Methods

This is a prospective, single arm and non-blinded study intended to involve 50 patients aged 6-64 years old, both males and females with indications to undergo upper airway surgery for obstruction which included one or a combination of septoplasty, bilateral inferior turbinate reduction, Endoscopic sinus surgery and adenoidectomy. The patients were provided with the 2 sets of questionnaires which are filled out by the patient before the surgery and 3 months after the surgery. The questionnaire includes two parts: Nasal Obstruction and Septoplasty effectiveness scale (NOSE score) and Bruxism Symptoms Questionnaire (BSQ). Preliminary statistical analysis was done for 39 patients who completed the study. Student t tests, Wilcoxon signed rank tests and one way ANOVA tests were done using SPSS Statistical software.

Results

Total number of patients completing the surveys was 39, 19 males and 20 females, age 6 to 62 years (Mean 31.83, Std - 19.924). The total number of adult patients was 24, 10 female and 14 males with age 31 to 62 years (Mean 44.95, Std-10.87). There was total 15 pediatric patients, 8 male and 7 female with age 6 to 16 years (Mean 9.26, Std-3.35). There is a statistically significant improvement BSQ score Postoperatively ($p<0.005$) using Wilcoxon signed rank test. Also, the NOSE score significantly improved after surgery ($p<0.005$) using paired T test. However, Pearson correlation testing did not indicate a statistically significant positive correlation of the improvement of the BSQ and NOSE scores. Overall, 17(43.5%) of the patients demonstrated significant improvement in BSQ score3 months postoperatively. 15(38.4%) of the patients showed mild to moderate improvement in BSQ score 3 months postoperatively. There is positive trend in improvement of BSQ score in relation to NOSE scores.

Limitations

The positive correlation could not be established between BSQ and NOSE score at present with this small number of patients. More research is needed to further define the role of upper airway obstruction and chronic sino-nasal disease among patients with bruxism.

Conclusions

Upper airway surgery improves symptoms of Bruxism for patients with indication for upper airway surgery for chronic sino-nasal symptoms. Statistically significant improvement noted in BSQ and Nose Scores postoperatively.

Fragmented Care in Pancreatic Cancer Treatment: Bridging Gaps for Improved Patient Related Outcomes

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Background

The centralization of pancreatic ductal adenocarcinoma (PDAC) care may predispose patients to experience fragmented care (FC), or care at multiple centers. For patients transferring to academic centers FC may offer benefits, but the impact of FC on operative outcomes in this population remains mixed in the literature.

Methods

PDAC patients who underwent definitive resection from 2008 to 2022 met inclusion criteria. Treatment facilities were retrospectively collected at four distinct time points: diagnosis, delivery of neoadjuvant chemotherapy and/or chemoradiation, and definitive surgery. Patients were subdivided by therapy type and receipt of FC versus no FC, where FC was defined by treatment at multiple facilities. All research activities were performed after IRB approval and in accordance with IRB research practice guidelines.

Results

As shown in Table 1 273 patients met inclusion criteria. With 146 patients receiving FC (53.5%), compared to 127 (46.5%) who did not. Most patients received surgery first (56.4%), versus neoadjuvant therapy (43.6%) (p=0.93). Race was associated with FC in both the Surgery first (p=0.03) and neoadjuvant therapy groups (p=0.07). FC patients who received neoadjuvant therapy were more likely to experience positive operative margins compared to no FC (15.7% vs 8.7% p=0.05). Among surgery first FC patients who transferred to a community cancer center for definitive resection, there was also a higher rate of positive operative margins than those with no FC (28.1% vs 9.7% p=0.08).

Limitations

Due to limited access to medical records at outside institutions, long term treatment and survival data has been difficult to obtain for patients who follow up at unaffiliated hospitals. This limitation has impacted the ability to explore patient survival data as part of this analysis. Additionally, as a retrospective study the ability to draw conclusions based on our results should be done cautiously.

Conclusions

FC was associated with positive operative margins among patients who received neoadjuvant therapy, and who transferred to community centers for surgery. Additional investigation into the impact of facility type in fragmented care is needed, as centralization of pancreatic surgery to academic centers may significantly impact operative outcomes in PDAC.

Table 1: Demographics by Degree of Fragmentation and Therapy Type

	No Fragmented Care (n=127)	Fragmented Care (n=146)	p-value
Surgery First	**n=72**	**n=82**	
Age at diagnosis (median)	68.0	65.0	p=0.21
Gender			p=0.07
Female	27	43	
Male	45	39	
Race			p=0.03
Caucasian	67	64	
Black	4	13	
Other	1	5	
Insurance Status			p=0.67
Private	27	35	
Public	44	45	
Uninsured	1	2	
Tumor size at diagnosis (median)	3.0 cm	3.4 cm	p=0.39
Neoadjuvant Therapy	**n=55**	**n=64**	
Age at diagnosis (median)	67.0	64.5	p=0.21
Gender			p=0.18
Female	29	26	
Male	28	38	
Race			p=0.07
Caucasian	48	50	
Black	5	5	
Other	2	9	
Insurance Status			p=0.26
Private	23	25	
Public	32	36	
Uninsured	0	3	
Tumor size at diagnosis (median)	3.5 cm	3.5 cm	p=0.64

Sex Differences in the Prescription of P2Y12 Inhibitor Agents Following Percutaneous Coronary Intervention

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Background

There remain significant gender inequalities in the delivery of healthcare. Third generation P2Y12 inhibitors (P2Y12i) (Prasugrel and Ticagrelor), are the standard of care for dual antiplatelet therapy (DAPT), especially in the setting of acute coronary syndrome (ACS). We postulate that these agents might still be unequally prescribed between genders, due to unmasked gender inequalities.

Methods

We examined gender differences in post percutaneous coronary intervention (PCI) care in a cohort of patients (n=12,354) from all 14 hospitals within the Steward Health Care system in the United States of America (USA). We conducted statistical analyses using the Chi-Square test of independence to explore associations between categorical variables, and logistic regression analysis to model the probability of clopidogrel prescription based on patient characteristics, adjusting for confounders.

Results

We found that women were less likely than men to be prescribed 3rd generation agents as compared to clopidogrel with an odds ratio (OR) of 0.74 (CI 0.69-0.8, $p<0.001$). This association remained significant after adjusting for confounding factors with an OR of 0.83 (CI 0.76-0.9, $p<0.001$).

Conclusions

Our study reveals that significant gender disparities exist in the prescription of P2Y12i after PCI, with women having a greater likelihood of being prescribed clopidogrel compared to more effective and guideline directed, 3rd generation agents. Closing the gap may improve outcomes for women after PCI and more research ought to be conducted to better understand the reasons behind this association.

Target area for conduction system – The Quest for the Holy Grail

Dutta, Roop; Demchuk, Karina; Koulouridis, Ioannis; Vybhav, Jetty; Astasurov, Artem; Dina, Ayodeji; Bhattacharya, Adhiraj; Goldman, Alena; Natan, Shaw; Wylie, John; Orlov, Michael

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Background

Left branch bundle area pacing (LBBAP) has emerged as primary method for physiologic conduction system pacing. Criteria for success, lead placement (LP) target and depth (LPD) are still debated. Our objective was to evaluate procedural characteristics of LBBAP, criteria of success, pacing parameters acutely and chronically and correlate them with LP detail in a large retrospective database.

Methods

Consecutive pts who received LBBAP for standard indications between 2019 and 2023 with detailed procedural characteristics and LP data (n= 229, 62% male) were selected from our retrospective database. Procedural characteristics, pacing parameters (acute and chronic) were collected and compared with criteria of electrophysiologic success ((EPS) - ECG morphology, QRS width, peak v6 LVAT), and anatomical detail of LP and LPD using uni- and multivariable analysis. LP was assessed by 2 independent observers in LAO/RAO views, LPD – by contrast angiogram and ring pacing data.

Results

LBBAP was successful anatomically in 225/229 pts (98%) and by EPS in 200/213 (94%). Pacing and procedural characteristics were consistent with prior studies. Distribution of LP in composite RAO/LAO view is shown in Fig. Most common LP areas are shown in bold. Several characteristics were associated with EPS, LP and LPD. Selective LBBAP was operator dependent ($p<0.02$), with a trend for mid RAO positions (middle 1/3 of the distance between left spinal border and apex) and significant association with LPD ($p<0.04$). LP other than posterior was associated with EPS ($p<0.04$). Presence of LB potential was not associated with LP or LPD.

Conclusion

Mid-RAO, lead depth, and non-posterior positions were associated with EPS and selective LBBAP. There is a wide anatomical distribution of successful LP suggesting a large pacing target area Operator experience is associated with EPS.

First experience with the 2088TC-38 lead for conduction system pacing using the Abbott CPS 3D locator delivery system: a New Kid on the Block?

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Background

Left Bundle Branch area pacing (LBBAP) is mostly performed using lumenless (LLL) Medtronic SelectSecureTM 3830 lead. Stylet driven leads (SDL) for LBBAP were recently introduced. Our objective was To compare Abbott 2088TC-38 SDL and CPS 3D locator delivery system and Medtronic 3830 LLL lead/delivery system acutely and chronically.

Methods

Consecutive pts (n=32, age 77.5 (12.3) years, 18 males), received SDL for standard pacing indications. LLL group was derived from our large retrospective database (n=229, age 78 (13) years, 143 males). Baseline, procedural and follow-up data were compared between both groups. The study protocol was approved by the IRB.

Results

Successful LBBAP was achieved in 94% in SDL group and 87% in LLL group (P=NS). Fluoroscopy and procedure duration did not differ between the groups. There was no significant difference in the number of lead placement attempts between the 2 groups. Median number of lead turns with SDL was 5 (4), with 1:1 torque transmission. SDL demonstrated slightly but significantly higher capture threshold and lower impedance acutely, difference in impedance persisted at 6 months (Table). In subgroups with LBBB and RBBB, there was no significant difference in the degree of QRS shortening or percentage of pts with correction between SDL and LLL. One lead related complication occurred in SDL group, and 5 - in LLL group. Both delivery systems were comparable in operators experience.

Conclusion

1. SDL handles similarly to LLL but has 1:1 torque transmission – SDL may allow for better tissue penetration.

2. Differences in pacing characteristics between SDL and LLL acutely and chronically are small.

3. Both delivery systems handle similarly.

	SDL (n=32)	LLL (n=229)	P value
Procedure time, min	70 (21.3)	80 (38.3)	NS
Fluoroscopy time, min	6.3 (5.1)	8.0 (5.9)	NS
Implant Threshold, volt	**0.75 (0.25)**	**0.5 (0.25)**	**<0.001**
Impedance, Ohm	**700 (227.5)**	**779 (209)**	**0.02**
R wave, mV	7.6 (5.9)	8.7 (5.5)	NS
peak LVAT, ms	77 (11.3)	77.5 (15)	NS
Stim-end QRS, ms	131.5 (21.5)	135 (22.8)	NS
6 months Threshold, volt	0.75 (0.1)	0.75 (0.3)	NS
Impedance, Ohm	**430 (55)**	**532 (101)**	**0.02**
R wave, mV	12 (2.3)	12.6 (12.1)	NS

Table 1: Procedural characteristics and Lead parameters acutely and chronically (Median (Range))

Impact of Geographic and Sociodemographic Factors on the Utilization of Robotic-Assisted Lung Resection versus Video-Assisted Lung Resection

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Background

Robotic-assisted thoracoscopic surgery (RATS) has become an accepted and widely used approach to lung resection. We hypothesized that geographic and sociodemographic factors would impact trends in the utilization of RATS versus video-assisted thoracoscopic surgery (VATS) for lung resection in the United States.

Methods

The National Inpatient Sample was queried for patients who underwent RATS and VATS lung resection between 2016-2020 for benign or malignant neoplasms and nodules. Cohorts were then stratified by degree (lobectomy vs. sublobar) and technique (RATS vs. VATS) of resection and compared with respect to pretreatment variables including sociodemographic, hospital-level, and geographic factors.

Results

From 2016-2020, 81,360 patients underwent lobectomy (35.7% vs. 64.3% for RATS and VATS respectively) and 88,620 underwent sub-lobar resection (24.2% vs 75.8% for RATS and VATS respectively). Rates of RATS lung resection increased annually, with the rate of increase varying by geographic hospital division (Figure 1). A significant difference in sociodemographic, hospital-level, and geographic variables was present between the RATS and VATS cohorts (all $p<0.05$).

The nine geographic hospital divisions showed statistically significant differences in utilization of RATS. The odds ratios (OR) with respect to East South Central for lobectomies ranged between 1.64 (95% CI: 1.35-2.0) for Pacific to OR 3.88 (95% CI: 3.23-4.67) for East North Central. For sublobar resection with respect to East South Central, odds ratios ranged between OR 1.64 (95% CI 1.31-2.06) for Pacific to OR 3.27 (95% CI 2.69-4.02) for South Atlantic.

Furthermore, patient factors, including race, age, insurance, and hospital factors, such as geographic location, teaching status, and size, were associated with variable odds of RATS utilization for lobectomy ($p<0.05$). These findings were largely similar in RATS utilization for sublobar resection except for insurance status ($p>0.05$).

Conclusions

Even after adjusting for sociodemographic factors, there were significant geographic regional differences in RATS utilization over VATS for lung resection, with overall rates of RATS utilization ranging from 16.9% to 44.7% for lobectomy and 11.5% to 30.6% for sublobar lung resection between different geographic regions.

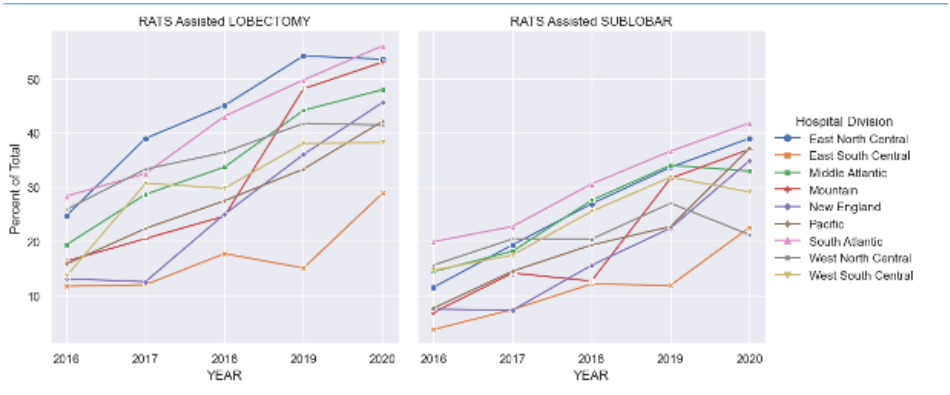

Figure 1: Rates of robotic-assisted lobectomy by hospital division from 2016-2020 (p<0.001) (left); rates of robotic-assisted sublobar resection by hospital division from 2016-2020 (p<0.001) (right); geographic hospital divisions within the United States (Inferior).

Figure 2: Geographic Hospital Divisions in the United States

Increasing Mortality in Endocarditis in the United States: A Population-Based Time-Trend Analysis Using the Global Burden of Diseases Database, 1990-2019

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Background:

Endocarditis is a serious and potentially life-threatening condition characterized by the inflammation of the inner lining of the heart typically caused by bacterial infection. Given its complex etiology, diverse clinical presentation, and potential for severe complications, a nuanced understanding of the epidemiology and trends in endocarditis is crucial for informing healthcare practices, preventive measures, and optimizing patient outcomes.

Methods:

Mortality data was obtained from the GBD 2019 database. Age-adjusted incidence rates were stratified by gender into males and females. Age-specific trends were assessed in two age sub-groups: younger adults (555 years) and older adults (>55 years). Time-trends, reported as annual percentage change (APC) and average APC (AAPC), were estimated using Joint-point Regression Software (v.4.9.0.1, NCI) utilizing Monte Carlo permutation analysis.

Results:

The study reveals notable gender and age-specific variations in the trends of endocarditis-related mortality. Among females, a significant increase in mortality rates was observed from 1990 to 2019 with AAPC of 3.2 (2.8 to 3.6, CI 95%) compared to 2.6 (2 to 3.2, CI 95%) in males in the same period (Figure 2). However, the gender-specific AAPC difference was not statistically significant - 0.5 (-1.3 to 0.2, CI 95%), P< 0.145. Age-specific analysis indicates a significant rise in mortality among those aged 55 years and above with AAPC for the years 1990 to 2019 of 3.2 (2.7 to 3.7, CI 95%). In contrast, individuals aged 20-54 years had an increase in mortality rates with an AAPC of 2.5 (2 to 2.9, CI 95%) with an age-specific AAPC difference of 0.7 (0.1 to 1.4, CI 95%), P <0.028 (Figure 1).

Conclusion:

In conclusion, this comprehensive time-trend analysis of endocarditis-related mortality in the United States from 1990 to 2019 reveals significant gender and age-specific variations. The lack of statistically significant gender-specific differences in mortality rates suggests a need for further exploration of contributing factors. The contrasting trends in different age groups emphasize the necessity for age-specific risk assessments and interventions.

Clinical Implications:

Understanding gender and age-specific trends aids risk assessment and intervention strategies. The observed decline in mortality suggests potential improvements in healthcare practices or changes in endocarditis epidemiology, necessitating continued research for targeted prevention and treatment approaches.

Figure 1.

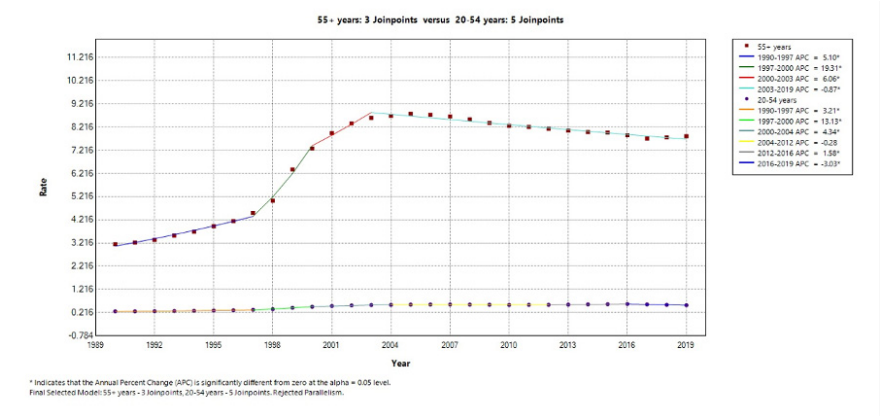
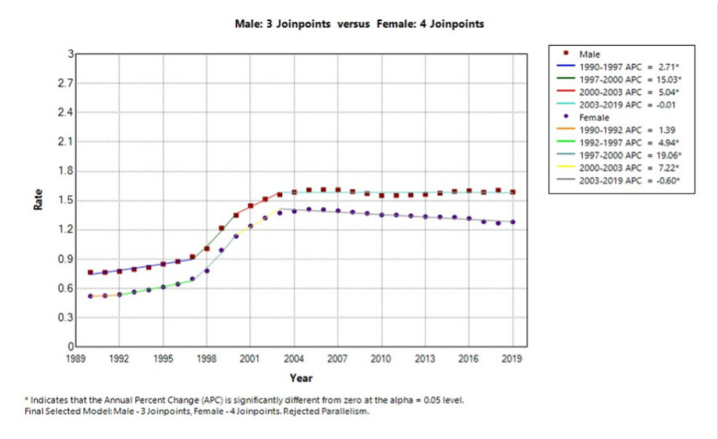


Figure 2.



Evaluation of Unfractionated Heparin Weight Based Dosing Protocols in Obese vs. Non-Obese Critically Ill Patients

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Steward St. Elizabeth's Medical Center

Background:

Unfractionated Heparin (UFH) is a common anticoagulant agent used in the treatment of NSTEMI, STEMI, AFib, and VTEs. The volume of distribution of heparin is similar to a patient's blood volume. Obese patients have an increased plasma blood volume which leads to an unclear mechanism of how to properly dose UFH in obese patients. The purpose of this study is to evaluate the time to achieve a therapeutic aPTT or anti-Xa level in critically ill non-obese (body mass index [BMI] <30 kg/m2), obese (BMI >30 kg/m2), and morbidly obese (BMI >40 kg/m2) patients receiving one of two heparin dosing protocols: Acute Coronary Syndrome (ACS)/Non-ST elevation Myocardial Infarction (NSTEMI) and Venous Thromboembolism (VTE).

Methods:

This is a retrospective single center observational cohort study using the data collected in Sentri7, a clinical patient monitoring system and electronic health records to assess heparin dosing protocols in non-obese, obese, and morbidly obese critically ill patients. This trial has been approved by the institutional review board. It included patients treated with an unfractionated heparin infusion for indications of ACS/NSTEMI and VTE in the ICU. Patients were excluded if they were less than 18 years of age, pregnant, received heparin prior to ICU admission, received the heparin infusion for less than 24 hours, or if the infusion was interrupted within the first 24 hours for reasons other than supratherapeutic levels. The primary outcome is the time to reach the first therapeutic aPTT or anti-Xa levels in each group. Secondary outcomes include the time to therapeutic range (defined as 2 consecutive aPTT or anti-Xa levels, bleeding events (per TIMI criteria), thrombotic events, and heparin treatment at the time of reaching therapeutic levels.

Results:

Of the 233 patients who were assessed for eligibility, 96 patients met the inclusion criteria and were included in this trial. Baseline characteristics were assessed for each protocol group, and BMI class. There are not statistically significant differences between the groups for any characteristic. For the VTE protocol, the median time to reach the first therapeutic level was 12.9 hours for non-obese patients, 13.3 hours for obese patients, and 18.6 hours for morbidly obese patients; p=0.95 (figure 1). For the ACS protocol, the median time to reach the first therapeutic level was 11.7 hours for non-obese patients, 10.9 hours for obese patients, and 19.3 hours for morbidly obese patients; p=0.37 (figure 2). No secondary outcomes were statistically significant.

Limitations:

This study is limited by a small sample size due to being conducted at a single medical center.

Conclusions:

This retrospective study did not show any statistically significant differences in time to first therapeutic level, or time to therapeutic range between non-obese, obese, or morbidly obese patients. Although not statistically significant, this study revealed areas of improvement that can be made for heparin protocol infusion rate compliance and bolus dosing.

Figure 1: VTE Protocol

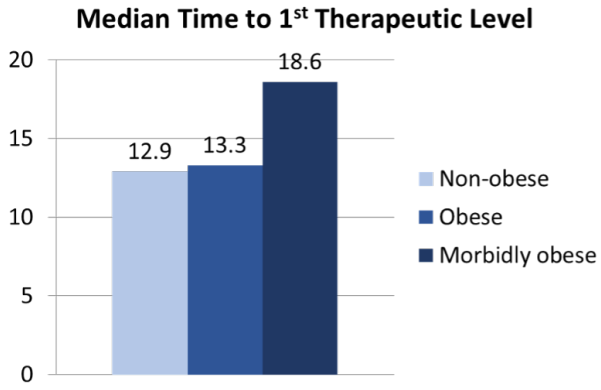
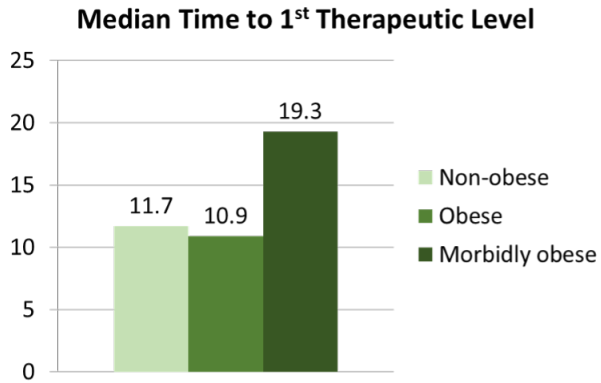


Figure 2: ACS Protocol



Spatial Genomic Characterization in Multifocal Bladder Cancer

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Background

Urothelial cancer of bladder (UCB) is a well-known multifocal disease with varying morphology and gene mutation profiles. Although it doesn't entirely explain the UCB, there are two different proposals regarding the origin of spatially independent tumors in the bladder. This could occur either through clonal expansion where a single mutated cell extends to a distinct tumor with further mutations or field effect where carcinogens affect the bladder lining by synchronous transformation of multiple cells. A clear understanding of the origin of multifocal UCB has important implications for the effective tailoring of personalized diagnostics and treatment. Despite efforts to identify intratumoral and intertumoral heterogeneity, the clonal origin of UCB is still debated.

Methods

To better understand the genetic mechanism behind the multifocality of UCB, we performed targeted next-generation sequencing (NGS) on 40 UCB lesions obtained from 15 bladders that were removed by cystectomy. We used germline distant muscle DNAs as a control group. After we detected mutations with NGS, we validated selected mutational events by using ultra-sensitive droplet digital PCR (ddPCR).

Results

Tumors from individual patients display nearly identical mutational landscapes, with few heterogeneous events. These heterogeneous events may have been acquired at a later point during the cancer development. Sequencing demonstrated similar genetic drivers within the same patient and revealed that clonal expansion is an early event of tumorigenesis. We also found distinct gene mutations in different UCB patients suggesting interpatient heterogeneity of clonal events in the UCB. Our result showed that TP53, FGFR3 and NOTCH4 are the most frequently mutated genes. Utilizing ddPCR, we validated alterations associated with tumorigenesis in TP53, FGFR3, AKT, PIK3CA genes.

Conclusions

Our study provides insight into the clonal origin of multifocal UCB and demonstrates that targeted next-generation sequencing is a reliable and sensitive method for interpreting the genetic landscape of UCB. These findings have the potential to inform clinical practice as sequencing of one single focus from a patient with the multifocal disease might be sufficient to understand the mutational profile and guide personalized treatment and risk stratification.

Trends of Alcoholic Cardiomyopathy Mortality in the United States: A Population-Based Time-Trend Analysis Using the Global Burden of Diseases Database, 1990-2019

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Background:

Alcoholic Cardiomyopathy (ACM) is a severe consequence of chronic alcohol abuse, contributing significantly to cardiovascular morbidity and mortality. This study explores the trends in ACM mortality in the United States from 1990 to 2019, employing a population-based time-trend analysis. Gender and age-specific variations are examined to elucidate distinct patterns.

Methods

Data was obtained from the GBD 2019 database. Join-point Regression Program (v4.9.0.1, NCI) was employed for time-trend analysis with a maximum of 5 joint-points allowed. The study analyzed Annual Percent Change (APC) and Average Annual Percent Change (AAPC) in mortality by gender (Male and Female) and age (Younger adults <55 and older adults 55 and above).

Results

Our study reveals notable gender-specific variations in the trends of Alcoholic Cardiomyopathy Mortality. Among Females, a significant decline in mortality rates was observed from 1990 to 2019 with AAPC of -5.2 (-5.7 to -4.7, CI 95%) compared to -1.6 (-1.9 to -1.3, CI 95%) in males in the same period. There was a statistically significant gender specific AAPC difference of 3.6 (3.1 to 4.2, CI 95%), P< 0.001. Age-specific analysis indicates a significant decline in mortality among those aged 55 years and above with AAPC for the years 1990 to 2019 of - 2 (-2.5 to -1.6, CI 95%). On the other hand, individuals aged 20-54 years had more decrease in mortality rates with an AAPC of - 2.2 (-3 to -1.5, CI 95%). However, the age specific AAPC difference was not statistically significant, 0.2 (-0.7 to 1.1, CI 95%), P=0.622.

Limitations:

The results rely on GBD 2019 data collected from various sources of differing reliability, possibly introducing bias due to the diverse nature of these sources and their handling. Despite this, the GBD collaborators made considerable efforts to acknowledge and mitigate biases, ensuring data quality.

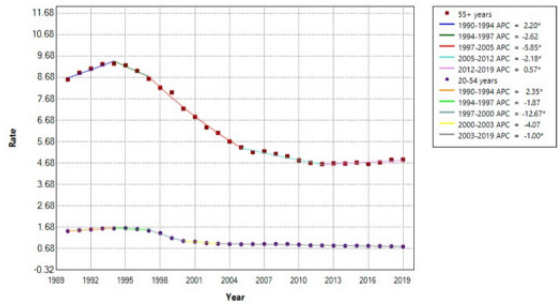
Conclusion:

This study unveils gender-specific disparities in ACM mortality trends, with females experiencing a more substantial decline compared to males. While mortality decreases across age groups, the age-specific analysis does not show a significant difference. These findings underscore the complex interplay of gender and age in the epidemiology of ACM.

ɡure 1-A. Table of Annual Percent Change PC) and Average Annual Percent Change APC) in Mortality by Gender and Age.

Mortality	Trends[a]			Gender/Age-specific AAPC difference (95% CI)[b]	Pairwise comparison P-values		
	Time Period	APC (95% CI)	AAPC (95% CI)		Gender/Age-specific AAPC difference	Coincidence[c]	Parallelism[d]
Sex							
Male	1990-1994	1.8 (1.1 to 2.5)	-1.6 (-1.9 to -1.3)	3.6 (3.1 to 4.2)	<0.001	<0.001	<0.001
	1994-1999	-1.8 (-2.4 to -1.1)					
	1999-2005	-5.1 (-5.6 to -4.7)					
	20005-2008	-0.6 (-2.7 to 1.6)					
	2008-2012	-2.9 (-3.9 to -1.8)					
	2012-2019	0.1(-02 to 0.4)					
Female	1990-1994	0.7 (-0.3 to 1.6)	-5.2 (-5.7 to -4.7)				
	1994-1997	-6.7 (-9.5 to -3.8)					
	1997-2000	-25.1(-27.4 to -22.8)					
	2000-2003	-9.2(-11.9 to -6.4)					
	2003-2010	-3.1 (-3.6 to -2.6)					
	2010-2019	0 (-0.3 to 0.3)					
Age							
55+ years	1990 - 1994	2.2 (1.0 to 3.4)	-2.0* (-2.5 to -1.6)	0.2(-0.7 to 1.1)	0.622	<0.001	<0.001
	1994 - 1997	-2.6 (-6.2 to 1.1)					
	1997 - 2005	-5.9 (-6.3 to -5.4)					
	2005 - 2012	-2.2 (-2.8 to -1.5)					
	2012 - 2019	0.6* (0.1 to 1.1)					
20-54 years	1990 - 1994	2.3 (0.9 to 3.8)	-2.2 (-3.0 to -1.5)				
	1994 - 1997	-1.9 (-6.3 to 2.8)					
	1997 - 2000	-12.7 (-16.6 to -8.6)					
	2000 - 2003	-4.1 (-8.4 to 0.5)					
	2003 - 2019	-1.0 (-1.2 to -0.8)					

a Time-trends were computed using Join-point Regression Program (v4.9.0.1, NCI) with 5 maximum join-points allowed (5-line segments).
b A p-value less than 0.05 indicates a statistically significant difference in Age or sex or both.
c Tests whether gender-specific trends were identical. A significant P-value indicates that the trends were not identical (i.e., they had different incidence rates and coincidence was rejected).
d Tests whether gender-specific trends were parallel. A significant P-value indicates that the trends were not parallel (i.e., parallelism was rejected).



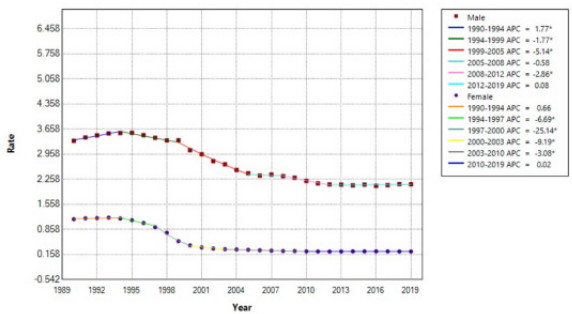


Fig 1-B. Graph of Alcoholic Cardiomyopathy Annual Percent Change (APC) in Mortality by Gender and Age.

Exploring the Promise of Aldosterone Synthase Inhibitors in Resistant Hypertension: Efficacy, Safety, and Potential Clinical Implications

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Background:

Resistant hypertension, affecting approximately 10-15% of hypertensive patients, presents a challenge due to its association with cardiovascular and renal complications. Despite treatment with multiple antihypertensive medications, an estimated 10-12 million people in the United States alone fail to achieve adequate blood pressure control. This necessitates alternative treatments beyond the recommended fourth-line medication, spironolactone, which is limited by dose-dependent side effects. Aldosterone synthase inhibitors (ASIs) selectively block aldosterone synthesis, offering a novel approach to management.

Methods:

A comprehensive literature search identified nine randomized controlled trials evaluating ASIs in resistant hypertension. These trials compared ASIs with standard antihypertensive therapy, assessing efficacy, safety, and cardiovascular outcomes. Data synthesis involved qualitative analysis due to study heterogeneity, ensuring a comprehensive evaluation.

Results:

ASIs demonstrated significant reductions in blood pressure and improvements in cardiovascular outcomes among patients with resistant hypertension. Studies highlighted ASIs' potential efficacy, particularly in cases of hyperaldosteronism. Selective aldosterone synthase inhibition with baxdrostat demonstrated dose-dependent reductions in blood pressure, plasma aldosterone levels, and aldosterone-mediated effects, with manageable side effects.

Limitations:

While ASIs showed promise, they lack selectivity for aldosterone synthase, potentially affecting cortisol synthesis and mediating non-aldosterone effects. Further research is warranted to elucidate these mechanisms and optimize ASI use in resistant hypertension. Study limitations include small sample sizes, short durations, and the need for larger trials to determine clinical utility.

Conclusions:

ASIs offer a promising therapeutic approach for resistant hypertension, demonstrating efficacy in reducing blood pressure and aldosterone levels with manageable side effects. Despite limitations, ASIs represent a potential new class of drugs for cardiovascular disease management, particularly in patients with treatment-resistant hypertension. Further research is needed to confirm findings, optimize ASI use, and determine long-term safety and efficacy.

Revolutionizing cardiovascular care: AI-driven electrocardiogram analysis for detection of left ventricular systolic Dysfunction

I. Kamel, L. Williams, M. Abouzid, A. Podlasek, K. Mohamed, A. Saleh, S. Esteghamati, H. Dietzius

Steward Carney Hospital, Dorchester, MA

Abstract:

Background: Various applications have emerged with significant advancements in artificial intelligence (AI). One such application involves AI-enabled detection of LVSD through electrocardiogram (ECG) analysis. This systematic review and meta-analysis aimed to evaluate the effectiveness of AI in ECG analysis for LVSD Detection.

Methods:

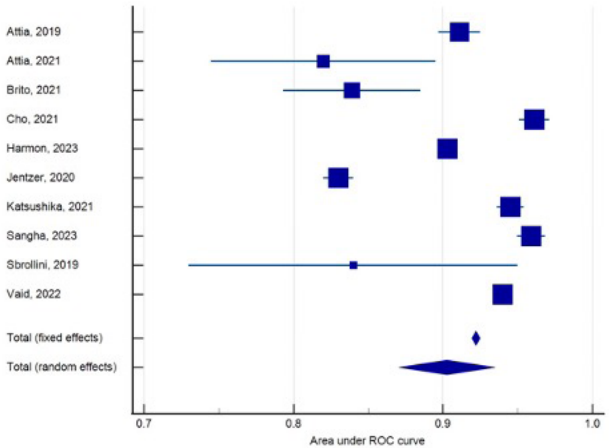
A comprehensive systematic review of electronic databases, including PubMed, EMBASE, and the Cochrane Library, was conducted using variations of the terms "ECG," "Heart Failure," "systolic dysfunction," and "Artificial Intelligence." with boolean operator "AND" or "OR". Studies were assessed for quality using predefined criteria, and data were extracted for quantitative synthesis. Ten studies were ultimately included in this analysis.

Results:

The meta-analysis encompassed ten studies. The AI algorithms were cumulatively trained on 618,719 ECGs from 207,173 patients and externally tested on 78,294 ECGs from 78,777 patients. It revealed that AI enabled ECG analysis achieved an AUC of 0.903 (95%CI 0.87-0.935), $p<0.001$ in identifying LVSD <40% among external validation groups. There is significant heterogeneity between studies $I2=98.49\%$, $p<0.001$. The algorithms exhibited high diagnostic accuracy and predictive value for LVSD.

Conclusion

AI-enabled ECG analysis emerges as a valuable and predictive tool for identifying left ventricular systolic dysfunction. The robust performance of these algorithms suggests their potential to assist physicianswith screening and facilitating timely referrals for further diagnostic assessments. As these findings pave the way for a paradigm shift in cardiovascular care, continued research and validation are imperative to unlock the full potential of AI applications in improving patient outcomes and shaping the future of cardiovascular medicine.



Trends in Mortality Associated with Myocarditis in the United States: A Population-based Time-trend Analysis Using the Global Burden of Diseases Database, 1990-2019

Saeed Abughazaleh, MD, Ahmad M. Al Nawaiseh, MD, Mohammad Tarawneh, MD, Ziad Qadadeh, MD, Richard D. Patten, MD

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Background

Myocarditis is a potentially fatal cardiac disease with diverse etiologies. We examined trends in myocarditis mortality in the United States (US) over the past three decades to explore time-dependent changes in mortality stratified by age and gender.

Methods

We studied myocarditis mortality data from the Global Burden of Diseases 2019 database stratified by gender and age (20-54 & above 55). Time dependent mortality trends of annual percentage change (APC) and average APC (AAPC) were analyzed using Joinpoint Regression Software. This is a publicly accessible database containing anonymized de-identifiable data. The institutional review board's policy deems this study exempt from review based on the recommendations of the National Human Research Protections Advisory Committee

Results

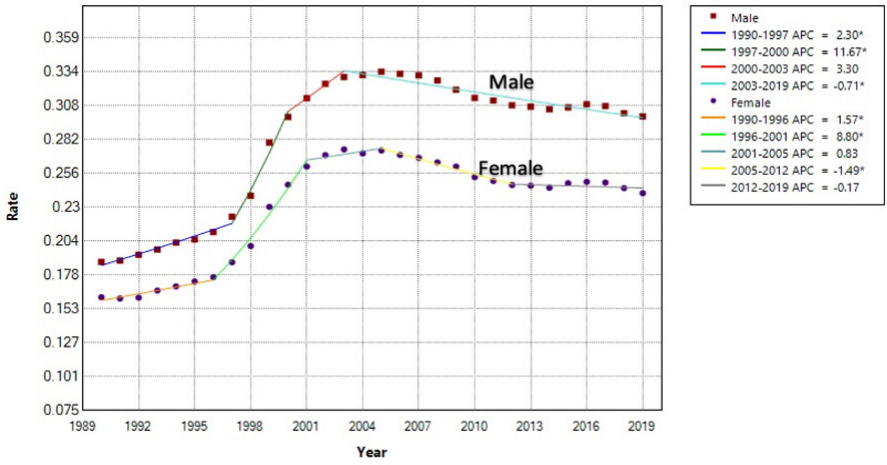
24,122 myocarditis-related deaths were reported from 1990 to 2019. Males displayed an increase in mortality from 1990 to 2019 with AAPC of 1.6 (1.2 to 2.1, CI 95%; $p<0.001$) with a similar rise of 1.5 in females (1.1 to 1.9, CI 95%; $p<0.001$). Data also revealed a rise in mortality in 55+ subjects with AAPC of 2.5 (2.2 to 2,8, CI 95%) and 2.1 (1.7 to 2.5, CI 95%) in 20-54 group ($p<0.001$), the age specific difference being borderline significant ($p<0.116$). The sharpest increase in mortality occurred in the late 1990s followed by a leveling off over the following two decades.

Limitations

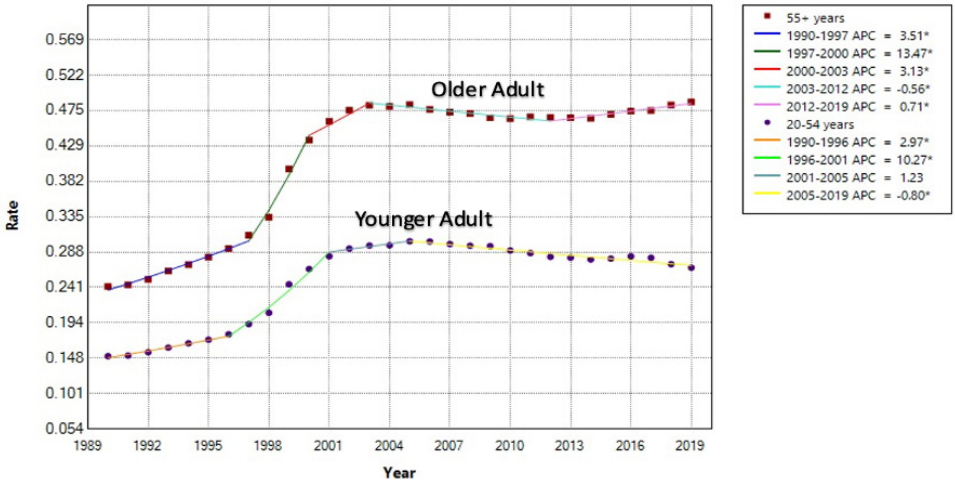
The results rely on GBD 2019 data collected from various sources of differing reliability, possibly introducing bias due to the diverse nature of these sources and their handling. Despite this, the GBD collaborators made considerable efforts to acknowledge and mitigate biases, ensuring data quality.

Conclusions

These data show a concerning rise in myocarditis mortality across gender and age groups. It is clear that more focused treatment strategies are urgently needed for the management of myocarditis.



Trend analysis of Myocarditis Age-Standardized Mortality Rate Among Gender from 1990 to 2019



Trend analysis of Myocarditis Age-Standardized Mortality Rate Among Age-groups from 1990 to 2019

Bile Cast Nephropathy: A Systematic Review

Iyiad Alabdul Razzak[1], MD; Hind El Naamani, MD[1]; Dimo Dimitrov[1], MD; Bertrand L. Jaber, MD, MS[1,2]

[1] Department of Medicine, St. Elizabeth's Medical Center, Boston, MA

[2] Division of Nephrology , Department of Medicine, St. Elizabeth's Medical Center, Boston, MA

Background:

Bile cast nephropathy (BCN) has been described in varying forms of liver failure. Although autopsy studies reveal a prevalence rate as high as 55%, BCN is often unrecognized or misdiagnosed due to uncertainties surrounding its clinical impact, prognostic value, and management strategies. To inform clinical practice, we performed a systematic review of case reports, case series, and cohort studies to examine the clinical characteristics and outcomes of patients with BCN.

Methods:

We conducted searches of electronic databases to identify eligible studies of patients with BCN, published between January 01, 1980, and October 31, 2023. The certainty of BCN diagnosis was classified as possible, probable, and definite, using pre-determined criteria. For this report, we included case reports and case series and stratified our analyses by initial total bilirubin level tertiles and by the cause of cholestatic liver disease, dichotomized into alcohol- versus nonalcohol-related. The Mann-Whitney U test and the Kruskal-Wallis test were used for comparison of continuous variables, and the Chi square test for comparison of categorical variables.

Results:

Sixty-seven case reports and six case series (involving 2 patients each), met the inclusion criteria, totaling 79 cases. Mean age was 48.3 years old, and 83.5% were men. The most common cause of cholestatic liver disease was drug-induced injury (30.4%) followed by infection (19.0%), and alcohol use (12.7%). Mean initial total bilirubin was 30.3 mg/dL. The diagnosis of BCN was deemed definite, probable, and possible in 65.8%, 32.9%, and 1.3% of patients, respectively. Forty (50.6%) patients required dialysis. Follow-up data on kidney function were available for 73 patients with complete recovery observed in 30 (41.1%) patients and partial recovery in 29 (39.7%) patients. Of the remainder, 8 (11%) patients remained dialysis-dependent or underwent kidney transplantation, and 6 (8%) died. There was a nonsignificant trend toward higher initial serum creatinine in the higher total bilirubin tertile-group (p=0.07). There were otherwise no significant differences in other kidney injury related markers across the total bilirubin tertile groups. When stratified by cause of cholestatic liver disease, patients with BCN in the setting of alcohol-related liver disease exhibited higher initial serum creatinine (p=0.01), higher peak serum creatinine (p=0.01), lower serum albumin (p=0.05), and higher INR (p=0.01).

Limitations:

There was incompleteness of data reporting across the included studies. In addition, a definitive diagnosis of BCN was not reached in approximately one-third of the cases.

Conclusions:

In the setting of acute kidney injury due to BCN, serum creatinine is higher among patients with cholestatic liver disease due to alcohol use, and among those with higher total bilirubin level, a possible indirect marker for bile acid associated nephrotoxicity. Studies are needed to examine whether among patients with BCN, there is a role for albumin dialysis, an extracorporeal nonbiologic liver support system, for the removal of unwanted albumin-bound and water-soluble substances, such as bilirubin and bile acids.

Factors Associated with Dialysis Requirement or Death in Patients with Bile Cast Nephropathy: A Retrospective Cohort Study

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[2] Division of Nephrology , Department of Medicine, St. Elizabeth's Medical Center, Boston, MA

Background

Bile cast nephropathy (BCN) is a cause of acute kidney injury linked to severe cholestatic liver disease and marked by rapid decline in kidney function. This syndrome is frequently under-diagnosed as the increased bleeding risk precludes the performance of a kidney biopsy. As a result, there are no published studies examining factors associated with kidney related outcomes in patients with BCN. To address this knowledge gap, we performed a retrospective cohort study of patients with BCN derived from a systematic review of individual case reports and case series, and examined patient-related factors that are associated with dialysis requirement or death.

Methods

We conducted searches of electronic databases to identify eligible studies of patients with possible, probable, or definite diagnosis of BCN, using pre-established criteria, published between January 01, 1980, and October 31, 2023. Univariate and multivariable logistic regression analyses were conducted to examine factors associated with the composite outcome of dialysis requirement or death. The results are displayed as odds ratio (OR) with 95% confidence interval (CI).

Results

Sixty-seven case reports and six case series (involving 2 patients each), met the inclusion criteria, totaling 79 cases. Seventy-eight (98.7%) patients met criteria for a definite and probable diagnosis of BCN. Mean age was 48.3 years old, and 83.5% were men. Alcohol-related cholestatic liver disease was present in 10 (12.7%) patients. The mean initial serum total bilirubin, peak total bilirubin, and initial creatinine level were 30.3 mg/dL, 44.7 mg/dL, and 3.9 mg/dL, respectively. 40 (51.3%) patients required dialysis, and 11 (14.1%) patients died. On univariate analysis, the initial serum creatinine was associated with higher odds for the composite outcome of dialysis requirement or death (OR 1.183; 95% CI 0.998, 1.401; p=0.052). There was no association between alcoholic liver disease (OR 3.667; 95% CI 0.726, 18.526; p=0.12) or the initial total bilirubin level (OR 1.002; 95% CI 0.986, 1.018; p=0.80) with the composite outcome of interest. On multivariable analysis, after adjustment for alcoholic liver disease and initial total bilirubin, higher initial serum creatinine remained independently associated with higher odds for the composite of dialysis requirement or death (adjusted OR 1.240; 95% CI 1.007, 1.526; p=0.043).

Limitations

The were incompleteness of data reporting across the included studies, and the study suffered from a small sample size.

Conclusions

Our exploratory analysis identifies the initial serum creatinine level as an independent predictor of dialysis requirement or death among patients with a definite and probable diagnosis of BCN. This underscores the importance of early serum creatinine assessment in the management and prognostication of BCN in the context of advanced liver disease.

QUALITY IMPROVEMENT WINNERS ANNUAL RESEARCH DAY 2024

Winner: 1st Place

Impact of Pharmacy Interventions in Improving Surgical Prophylaxis Antimicrobial Selection and Administration Time

Waad Alrohily, PharmD[1]; Salwa Elarabi, R.Ph. BCPS-AQ Infectious Diseases[1]; Jorge Fleisher, MD[1]

[1]St. Elizabeth's Medical Center

Background:

Clinical practice guidelines for antimicrobial prophylaxis in surgery provide recommendations to standardize perioperative antimicrobials focused on agent selection, dosing, and timing of administration. Despite adopting these guidelines at SEMC, the rate of surgical site infections (SSI) remains above the national average at 1.1%. An initial assessment was conducted to evaluate the compliance with guideline recommendations for perioperative antimicrobials for neurosurgery, orthopedic, and vascular cases and found that only 72% (68/95) of patients received correct perioperative antimicrobials selection, dosing, and timing. Since failure to adhere to antibiotic prophylaxis can increase the risk of SSI, steps must be taken to improve compliance.

Clinical Setting and Stakeholders:

This project was implemented at SEMC to improve and standardize the surgical antimicrobial prophylaxis prescribing practices based on guideline recommendations to decrease SSI rates.

Quality Improvement Plan (Measures and outcomes):

The project aimed to have ≥ 90% of surgical patients with appropriate perioperative antimicrobial selection, dosing, and timing in orthopedics, neurosurgery, and vascular services by April 1st, 2024. After identifying the root causes of incorrect administration of perioperative antimicrobials, multiple interventions were implemented targeting these barriers. Interventions included providing education to anesthesia and surgical providers, creating reference cards, and ensuring the availability of desired antibiotics in the operating rooms and pre-operative areas. The outcome measure was the percentage of surgical patients with correct perioperative antimicrobials selection, dosing, and timing. Process measures included the appropriateness of antibiotics selected, the appropriateness of prescribed doses, the percentage of antibiotics administered at the appropriate time before surgical incision, and the number of patients with correct intra-operative antimicrobial redosing. The balancing measure was the number of patients with SSI within 30 days.

Results:

The percentage of correct antimicrobial prophylaxis administration for surgical patients increased from 72% to 90% after interventions (Figure 1). All criteria for antibiotic prophylaxis according to the guidelines were met in 72% of patients in the preintervention group compared with 80% in the postintervention group. There was an improvement in the appropriate selection (91% vs 98%) and dosing of antibiotic administration (91% vs 96%) between the preintervention and postintervention groups. The timing of antibiotic administration also improved from 77% to 83% after interventions. 91% of patients were re-dosed appropriately in the postintervention group compared with only 63% in the preintervention group (Figure 2). SSI occurred in 4% of patients in the postintervention group compared to 6% in the preintervention group.

Limitations:

Information collected on antibiotic administration is limited to what is reported in the intraoperative records in the electronic health record (EHR). Additionally, not placing orders in the EHR before surgery limited pharmacists' interventions in ensuring appropriate antibiotic administration.

Conclusions:

Implementation of this project improved the prescribing practices of surgical antimicrobial prophylaxis. There was an improvement in all components of antibiotic administration (choice, dose, timing, and re-dosing) between the preintervention and postintervention groups. Our results reflect previous retrospective analyses showing that compliance with antibiotic prophylaxis protocols may reduce the risk of SSI. Future efforts should optimize the timing of antibiotic administration by ordering antibiotics before the surgical date, implementing an automatic antibiotic prophylaxis timer, and reinforcing education for providers.

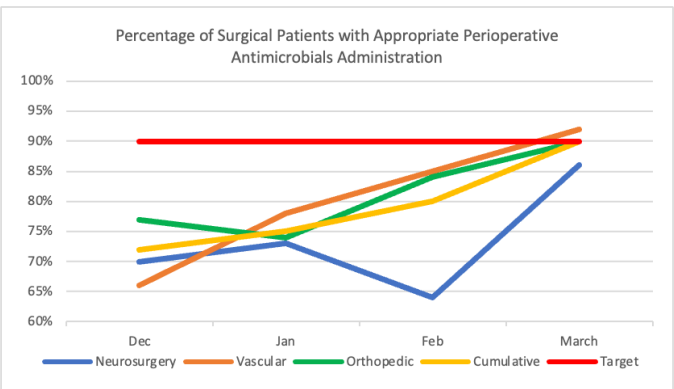

Fig. 1 Data shown reflects the monthly percentages of surgical patients with appropriate perioperative antimicrobials selection, dosing, and timing

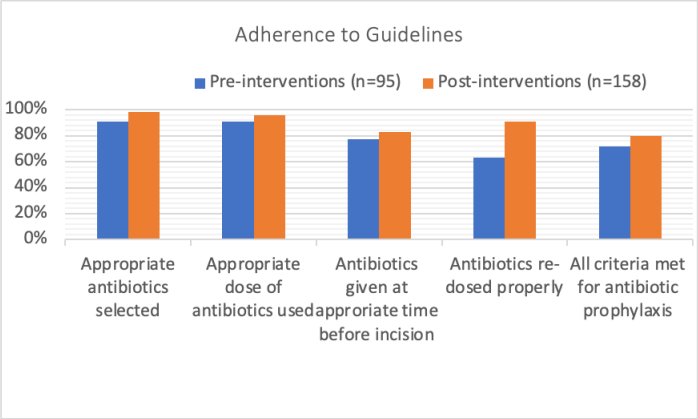

Fig. 2 Data shown reflects the adherence to guidelines between the preintervention and postintervention patient groups

Winner: 2nd Place

RxEase: Empowering Recovery through Bedside Medication Accessibility

Ibrahim Kamel MD. MHA[1], James P Morgan MD. FACC[1], Marie-Ange Alexandre MD. MPH[1], and Deepak Kataria. MD[1], Lauretta Okoye Pharm-D

[1]Internal Medicine, Steward Carney Hospital, Dorchester, USA

Background

Addressing medication compliance and minimizing readmissions is a multifaceted challenge within the healthcare landscape. Amidst this complexity, healthcare systems endeavor to implement effective strategies to alleviate strain on resources. One promising approach involves ensuring medication adherence by furnishing patients with their prescribed medications before discharge, facilitating continuity of care.

Clinical Setting and Stakeholders

This initiative operates within Carney Hospital's inpatient clinical setting, engaging various stakeholders, including admitted patients, community pharmacy pharmacists, hospital residents, and the hospital's Chief Executive Officer.

Quality Improvement Plan:

Measures

The effectiveness of this intervention is evaluated through the analysis of readmission rates post-discharge for patients who received medications before leaving the hospital. Each patient serves as their own control, enabling a comparison against their individual historical trends.

Outcome:

Initial findings indicate that patients receiving medications before discharge experienced no readmissions within the crucial 30-day period. Ongoing monitoring at 6-month and 1-year intervals, with each patient acting as their own control, provides insights into the sustained impact of this intervention.

Results:

Preliminary data analysis showcases a promising 95% consent rate among patients who participate in the program, with 86% successfully receiving their prescribed medications before discharge. While final readmission numbers are pending analysis, these early findings underscore the potential of this project.

Enrollment is active, with interim results indicating that 43 of 45 selected patients consented to the program, while 2 have declined to participate. Thirty-seven patients received their medications as prescribed, while 6 patients were prescribed but did not receive their medications.

Limitations:

Despite the positive strides, several limitations merit consideration. Insurance coverage remains a significant hurdle, as some patients lack adequate coverage. Although the majority do not face copays, those who do have an average cost of $22 per prescription. Furthermore, the logistics of coordinating with an external community care pharmacy pose challenges, contributing to limited recruitment numbers. Additionally, there is a risk of bias in recruitment, as it is based on individual doctors' discretion.

Conclusions:

Our healthcare facility prioritizes seamless transitions from hospital care to home. Our innovative pharmaceutical service, bolstered by collaborative partnerships with community pharmacists, transcends traditional practices. By delivering prescriptions directly to patients' bedsides, we prioritize convenience and minimize stress during discharge. Moreover, personalized care remains at the forefront of our approach. Our pharmacists offer tailored discharge counseling, ensuring patients receive the support they need. Through effective communication and exploration of insurance-covered alternatives, we simplify the process, empowering patients to make informed decisions while still in the hospital.

This patient-centric model eliminates the need for post-discharge pharmacy visits, allowing patients to focus on their recovery journey uninterrupted. In doing so, we strive to enhance overall patient outcomes and alleviate strain on the healthcare system.

Winner: 3rd Place

QI Project Goal: To increase the adequacy of perioperative handoffs among anesthesia residents by implementing the IPASS bundle

Nicole Shalit[1], Abhay Tyagi[1], Hasan Ashfaque[1], Hyung Min Lee[1], Maria Arshanskiy[1], Angelina Mavropoulos[1]

[1]St. Elizabeth's Medical Center Department of Anesthesiology

Background:

Intraoperative handoffs play a pivotal role in effective and safe anesthetic management by ensuring effective communication, continuity of care, and patient safety throughout the perioperative period. Collaboration, clear communication, and adherence to standardized handoff protocols are essential for optimizing patient outcomes and minimizing the risk of adverse events during surgical procedures. This project was designed to improve the communication between anesthesiology residents, ensure patient safety and reduce medication errors by utilizing the IPASS handoff bundle.

Clinical Setting and Stakeholders:

The study took place at St. Elizabeth's Medical Center operating rooms in which anesthetic services are provided by anesthesiology residents under attending supervision.

Quality Improvement Plan (Measurements and Outcomes):

A baseline survey was conducted in March 2023 with questions related to resident satisfaction with prevailing intraoperative handoff practices. Descriptions of unintended medication errors and patient adverse outcomes as they related to inadequate handoffs were gathered. (Fig 1A). The goal of this QI project was to increase intraoperative handoff satisfaction (IHS) among anesthesia residents by 50% in 1 year. A standardized handoff protocol was then designed to address the major shortfall areas and posters and plastic laminated cards to go along with ID badges were printed and distributed among the residents. (Fig 1B) Education sessions were held before the roll out of standard intraoperative handoffs. After 2 months of implementation, a post intervention survey was conducted to assess results.

Results:

From the baseline of 41% satisfaction, the post intervention survey showed 86% of the residents were satisfied by the standardization of the intraoperative handoffs. The adverse event recall because of inadequate handoffs decreased from 30% to 9% of respondents. A controlled-medication error rate decreased from 30% to 23%. (Figure 2)

Limitations:

Even though the results thus far are promising, there were limitations to our study. The need of a third person monitor during sign-out such as an attending physician or a circulating nurse to ensure that the handoff was done in standardized fashion was missing. This study entrusted

residents to monitor themselves when doing sign-outs which may have introduced bias. This was especially apparent when the final part of the bundle required the synthesis of summary and verbalization of the handoff by the receiver and was often not performed.

Conclusions:

In order to sustain the gains achieved through this quality improvement project, ongoing commitment, collaboration, and vigilance are necessary. Key strategies for sustaining improvement include:

- Regular training and education sessions to reinforce best practices in intraoperative handoffs and communication skills.
- Integration of handoff protocols into standard operating procedures; a skill to be learned the first day starting anesthesiology residency.
- Cultivating a culture of safety, transparency, and continuous learning that prioritizes patient-centric care and quality improvement at all levels of the organization.

In conclusion, the quality improvement project on IPASS has not only yielded tangible improvements in patient safety and care coordination but has also laid the foundation for a culture of excellence and continuous improvement within the perioperative care setting.

Figure 1 A

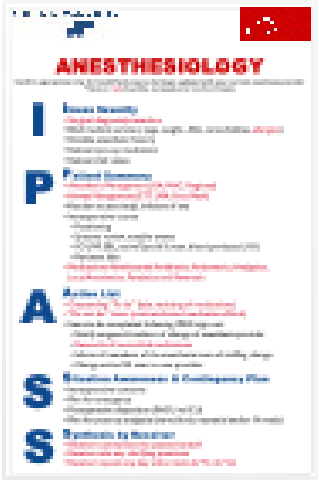

Figure 1 B

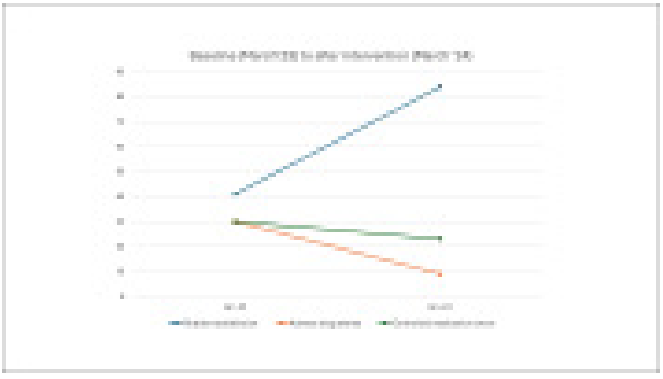

Figure 2. Baseline to after intervention comparison showing resident satisfaction with the handoffs increased from 41% to 86%, adverse drug events decreased from 30% to 9% and controlled medication error decreased from 30% to 23%.

Honorable Mention

Less is More: A Quality Improvement Initiative Aimed at Reducing Blood Product Transfusion in Cirrhotic Patients Prior to Paracentesis

Paolo Lopedote[1], Juliano Alhaddad[1], Mayssam El Najjar[1], Jorge Avila[1], Jon Ali[2], Eugene Tikh[2], and George Massih[1].

[1]Department of Medicine, St. Elizabeth's Medical Center, Boston, MA, USA

[2]Department of Radiology, St. Elizabeth's Medical Center, Boston, MA, USA

Background

Ascites develops in 5-10% per cirrhotic patient per year. Hospitalized cirrhotic patients with ascites, commonly undergo diagnostic and/or therapeutic paracentesis. Moreover, cirrhotic patients frequently exhibit abnormalities in their coagulation profile, leading to unnecessary pre-procedure blood product transfusions that can increase the rate of complications and costs. Indeed, studies have demonstrated that the coagulation profile does not reliability predict bleeding risk in cirrhotic patients. Taken together, and given that paracentesis is a low-bleeding risk procedure, the Interventional Radiology (IR) Society and the American Association for the Study of Liver Disease (AASLD) recommend against correcting INR and/or transfusing platelets if the platelet count is higher than 20.000/uL.

Clinical Setting and Stakeholders

We identified as our clinical setting the emergency room, the medical floor, and the intensive care unit (ICU), where residents are directly involved in ordering and/or performing paracenteses. Stakeholders were defined as the medicine residents, the teaching hospitalists, the pulmonary faculty, the emergency department faculty, the interventional radiology team, and the blood bank.

Quality Improvement Plan

We organized a conference with the medicine residents to explain and discuss the current IR Society and AASLD guidelines. We distributed and attached flyers in the medicine, ICU, and ED working stations, summarizing the recommendations from these societies. We collaborated with two IR attendings to enhance the implementation of these recommendations in our practice.

Results

Using the ICD billing code for paracentesis, we identified 95 paracenteses performed in cirrhotic patients in 2021 in the Medicine service or the Intensive Care Unit. 8 patients were excluded as blood product transfusion was appropriate for another documented clinical necessity (e.g. active bleeding, other invasive procedure), yielding a final cohort of 87 paracenteses. Among those, 15 (17%) were performed in patients with either INR ≥ 2 or a platelets count < 50.000/uL. 11 out of 15 of those paracenteses (73%) were preceded by a

transfusion of FFP and/or platelets. Following our intervention, we used the ICD billing code for cirrhosis and identified 42 paracenteses done between February of 2023 and December of 2023 in the same services. We excluded 2 patients who received a blood product due to another documented clinical necessity. Among the remaining 42 paracenteses, 11 (26%) were performed in patients with either INR ≥ 2 or platelets < 50.000/uL. Eighteen percent (2/11) were preceded by a transfusion of FFP and/or platelets. Using Fisher's exact test, a statistically significant difference in the transfusions in the pre- and post-intervention cohort was found (73% vs 18%, p = 0.008).

Limitations

Limitations of our projects include the small sample size, the use of different billing codes to identify the pre-intervention and post-intervention cohorts, and inadvertently other unaccounted factors that might have contributed to the observed difference.

Conclusion

Future PDSA cycles are needed to reinforce the observed results, as well as extend providers' compliance with the most recent guidelines. Namely, future outcomes of interest may include not holding anticoagulation before paracentesis, administering vitamin K for an INR above 2.5, and administering cryoprecipitate for a fibrinogen below 100 mg/dL.

Honorable Mention

Improving Screening of Metabolic-Dysfunction Associated Liver Disease (MASLD) in Patients with Type 2 Diabetes Mellitus: A Quality Improvement Initiative

Maram Alenzi[1], MD; Iyiad AlAbdul-Razzak[1], MD; Alya Usman[1], MD; Jad Mitri[1], MD; Monica Chavez[1], MD.

[1]Department of Medicine, St. Elizabeth's Medical Center, Boston University School of Medicine, Boston, MA.

Introduction

The global burden of Metabolic Dysfunction-Associated Liver Disease (MASLD) has increased substantially in the past decade. Among patients with type 2 diabetes mellitus (T2DM), liver steatosis, advanced fibrosis, and cirrhosis were observed in 73.8%, 15.4%, and 7.7% of cases, respectively. Recent guidelines recommended primary care-based screening for MASLD fibrosis in all T2DM patients by utilizing a non-invasive screening tool, Fibrosis-4 (FIB-4) index. Per these guidelines, we recognized an inadequate screening for MASLD fibrosis. This quality improvement initiative (QII) aimed to enhance MASLD screening among T2DM patients by implementing a smartphrase and delivering education to providers.

Clinical settings and Stakeholders

This QII targeted primary care clinic setting, involving primary care physicians (PCPs) and medical residents as stakeholders. We aimed to improve MASLD screening, select appropriate screening modalities, and determine the criteria for referral to specialty care. We evaluated PCPs' use of FIB-4 score before and after implementation of FIB-4 risk stratification algorithm (Figure.1). The objective was to shift from relying on liver tests for screening to implementing fibrosis screening. This will facilitate earlier identification of patients at risk for advanced fibrosis and serious liver-related complications, reduce unnecessary liver biopsies, and improve overall patient care.

Quality Improvement Plan

A retrospective chart review was conducted on 110 patients with T2DM seen in our community clinic between January 2023 and March 2023 to assess baseline screening rates. A smartphrase was created through Athena electronic health record (EHR), integrating all pertinent information to aid providers in screening for T2DM complications, including MASLD. This smartphrase was shared with all internal medicine residents through several educational sessions. The smartphrase's use and the documentation of FIB-4 scores were monitored.

Results

Results of a baseline assessment of 110 patients with T2DM showed that only 3.6% of patients underwent screening with FIB-4 score, while 96.3% did not have their FIB-4 score checked. Among those not screened, 31% were found to have an indeterminate or high risk for advanced fibrosis. During cycle 1, there was a tenfold increase in the screening rate for MASLD, with a

FIB-4 score recorded in 30.3% of patients (p<0.001) (Figure.2). Among these, 10 patients (50%) had a FIB-4 score ≤1.3, indicating low risk for advanced fibrosis and providers were recommended to continue regular follow-up over 1-2 years to monitor changes in liver health. An additional 8 patients (40%) fell into the indeterminate range on the FIB-4 score (1.3-2.67), warranting risk stratification with elastography to guide appropriate management strategies. Lastly, 2 patients (10%) had FIB-4 score ≥2.67, necessitating prompt referral to GI/hepatologist for further management.

Limitations

Single-center evaluation and one limited 3-month baseline assessment.

Conclusions:

An educational and EHR-based intervention significantly improved the utilization of FIB-4 index to appropriately screen for MASLD fibrosis in T2DM patients. This results in an appropriate and timely referral of patients at high risk for advanced fibrosis to hepatologist, while continuing PCP management of low-risk patients. Further enhancement could be achieved by automatically calculating FIB-4 score and notifying providers if it has not been documented in the past 2 years.

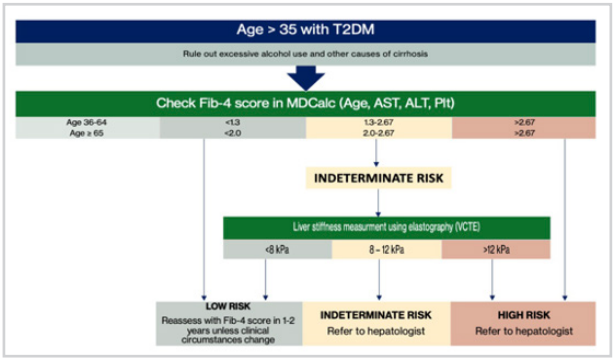

Figure 1: AASLD FIB-4 MASLD risk stratification algorithm

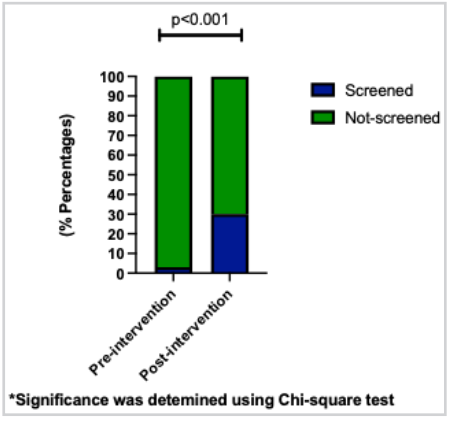

Figure 2: Difference in PCP use of FIB-4 based risk stratification before and after implementation of the AASLD's algorithm in primary care

Honorable Mention

Improving Anti-Seizure Medications Administration Time

Natalya Asipenko, PharmD, BCPS, BCCCP[1]; Nikolay Korchemny, MD[2]; Alicia Dupre, MD[3]; Duncan M. Kuhn, MD[4]

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Background

Status epilepticus is defined as continuous seizure activity lasting five or more minutes or repetitive seizures without the return of consciousness between episodes. The severe seizures characteristic of status epilepticus can cause neuronal cell death, leading to irreversible injury within minutes. Therefore, the timely administration of anti-seizure medications (ASMs) is critical. The Neurocritical Care Society recommends that intravenous ASMs be available for administration within less than 15 minutes.

Clinical Setting & Stakeholders

Previously, administering ASMs at our hospital required a multi-step process: providers placing orders; pharmacists verifying orders; the in-hospital pharmacy preparing the medication; delivery to the patient's room; and nurses administering the medication. Delays in drug administration can occur at any stage of this process. Alternatively, if medications are kept in Pyxis MedStation, they may be more readily available, allowing us to bypass several steps and reduce delays.

Quality Improvement Plan (Measures & Outcomes)

We identified a systematic delay in ASMs administration at our hospital and set out to improve administration time by creating a STAT ASM administration protocol. We implemented a new system for administering ASMs in the ED and ICU, whereby nursing staff are able to draw ASMs from Pyxis MedStation and prepare the medication at bedside. Implementation involved: 1) Making the medications available in Pyxis, 2) Creating a new order set in MEDITECH for physicians, 3) Developing new nursing protocols, 4) Introducing IV push instead of infusion for levetiracetam and lacosamide, 5) Educating staff about the new protocol.

Results

The order-to-administration times of ASMs were reviewed during 2020 and 2021 and we identified a systematic delay in administration time was observed in all hospital locations and for all ASMs including levetiracetam, fosphenytoin, and lacosamide. After the introduction of our new protocol, we reviewed data over an 8-month period from March to October 2023. The median time to administration pre-intervention was 57 minutes (n=35, Q1 = 47.5 minutes, Q3 = 72 minutes; Figure 1.). Post-intervention, the median time to administration was 28 minutes (n=97, Q1 = 12 minutes, Q3 = 60 minutes). This difference was statistically significant ($p < 0.01$). Notably, those orders that were placed as 'STAT' showed a further improved time

to administration with a median time of 20 minutes (n = 42, Q1 = 10 minutes, Q3 = 40.75 minutes, Figure 2.).

Limitations:

Our data review does not permit us to specify the exact clinical scenarios in which these one-time orders were placed. Consequently, we are unable to report changes in neurological outcomes. Furthermore, we cannot determine what percentage of orders were truly emergent versus routine.

Conclusion:

A significant delay in the administration times of ASMs exists across all departments of our hospital. Our new protocol has substantially improved the time-to-administration in the ED and ICU, and will allow prompt access to ASMs in case of emergency for patients. Steward Enterprise has approved this pilot for expansion to all locations, including medical floors. We anticipate its implementation at other Steward hospitals soon.

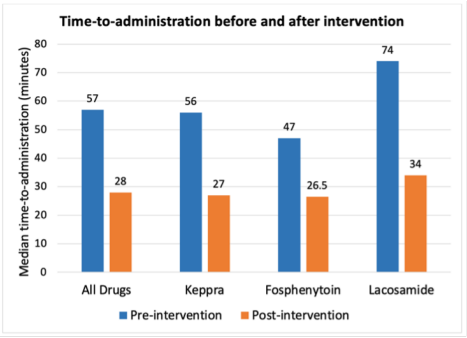

Figure 1 illustrates the administration times for various ASMs, capturing the interval from the provider's order placement to the administration to the patient, before and after implementing the new STAT ASM protocol. Data is restricted to orders from the ED and ICU.

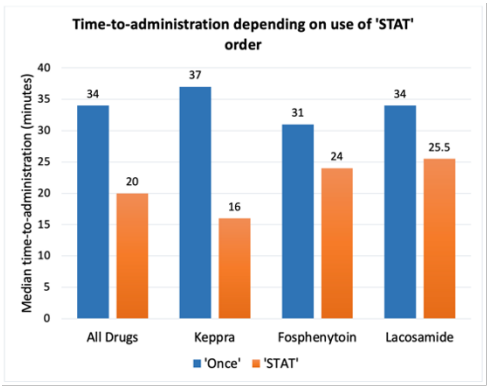

Figure 2 compares the administration times of ASMs drugs in the ED and ICU following the implementation of the new protocol. It differentiates between instances where the ordering provider ordered the medication as 'Once' or designated the medication order as 'STAT'.

Implementation of Pharmacist-Initiated Interventions to Improve Admission Medication Reconciliation

Amal Al Naif, PharmD[1]; Lindsay Arnold, PharmD, MPH, BCPS[1]

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Background

Adverse drug reactions (ADRs) are one of the leading causes of morbidity and mortality in hospital settings, with approximately 40% of these ADRs occurring due to a lack of medication reconciliation during admission, transition, and discharge of patients. Medication reconciliation involves identifying a comprehensive and accurate list of a patient's home medications and comparing it against medication orders during their hospitalization. The goal of medication reconciliation is to prevent medication errors, decrease discrepancies, and enhance patient safety. At St. Elizabeth's Medical Center (SEMC), data has shown that the admission medication reconciliation completion rate is only 25%, with a discrepancy rate of 75%.

Clinical settings and stakeholders: This project was conducted at SEMC to improve the accuracy and completeness of admission medication reconciliation for patients admitted to the internal medicine service. The project involved the implementation of pharmacist-initiated multiple Plan-Do-Study-Act (PDSA) cycles.

Quality improvement plan

The project aim is to improve admission medication reconciliation completion by >75% by May 1, 2024. Medication reconciliation completion is defined as 100% accurate and documented within 24 hours from admission time. The outcome measure is the percentage of completed medication reconciliation at 24 hours. Process measures include the number of completed medication reconciliations within 24 hours of admission, the rate of discrepancies, and the type of discrepancies. Balancing measure include the time spent by pharmacists completing admission medication reconciliation. Root cause analyses were conducted through meetings with medical chief residents and a survey questionnaire. Using the survey results, educational handouts and reminder cards were developed and subsequently distributed in medical residents' offices.

Results

The survey results showed that 97% of residents reconcile patient home medication between 6-24 hours of admission, and 92% use 2-4 resources to confirm patient's home medication. The top three reasons for the low rate of completed medication reconciliation were lack of resources, lack of time, and forgetfulness. After implementing interventions, the percentage of completed admission medication reconciliation between March 4th – 22nd improved by > 75%, with a 98% completion rate within 24 hours. The rate of discrepancies was 35%, with omissions being the most common type. Pharmacists spent an average of 25 minutes completing medication reconciliation. The average age of patients was 65 years, with 50% taking at least 10 medications, 40% on high-risk medication, and 55% had a previous admission within the last 6 months.

Limitations

It was impossible to determine the number of resources used by the residents to confirm the patient's home medication list. Inconsistent documentation of updated patient home medication list.

Conclusions

Implementation of multiple PDSA cycles improved the admission medication reconciliation completion rate for patients who were admitted to the internal medicine service. The majority of admitted patients were classified as high-risk for medication errors, emphasizing the importance of completing medication reconciliation. However, education alone is not a sustainable solution, and other systemic processes should be investigated to further enhance medication reconciliation.

Iron Deficiency Screening in Patients Admitted with Acute Decompensated Heart Failure: a Quality Improvement Project

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Background

Iron deficiency (ID), with or without anemia, is an adverse prognostic factor in patients with heart failure. Prior studies have shown that, up to 50% of patients admitted to the hospital for acute decompensated heart failure (ADHF) have concomitant ID. Treatment with intravenous (IV) iron in these patients has been proven to increase exercise capacity, improve quality of life, and decrease re-hospitalization rates. Because of this we decided to evaluate and improve the prevalence of ID screening in this patient population.

Clinical setting and Stakeholders: St Elizabeth's Medical Center. Internal medicine residents, cardiology fellows.

Measures and Outcomes/Methods

For the pre-intervention period (January-July 2022), we reviewed the charts of patients who were admitted to St Elizabeth's Medical Center with ADHF and evaluated whether or not they were screened for ID based on the guidelines (Hemoglobin <15 g/dl). As a secondary endpoint we evaluated if they were treated with IV iron.

We surveyed internal medicine resident in January 2023 to understand gaps related to ID screening in these patients. We provided an educational session in February 2023 for all internal medicine resident and printed flyers with the recommendations about ID screening and placed them in different workspaces.

We performed the post-intervention analysis after reviewing the charts of patients admitted with the same diagnosis during April-October 2023.

Results

Pre-intervention data included 100 patients admitted with ADHF. However, 12 patients were excluded as they did not meet criteria for ID screening. Form the remaining 88 patients, 58 (66%) were male and 30 (34%) were female. 42 (47%) of them were screened for ID. From this group, 34 (80%) had Hb <12 g/dl, and within them 16 (47%) received treatment with IV iron. 9 patients (10%) from the entire cohort were discharged on P.O. iron.

Post-intervention data included 100 patients admitted with ADHF. However, 7 patients were

excluded as they did not meet criteria for ID screening. From the remaining 93 patients, 53 (56%) were male and 40 (44%) were female. 54 (58%) of them were screened for ID. From this group, 45 (83%) had Hb <12 g/dl, and within them 18 (40%) received treatment with IV iron. 15 patients (16%) from the entire cohort were discharged on P.O. iron.

Limitations

One of the biggest limitations to providing IV iron was the length of stay of the patients, which made P.O. iron a better option.

Conclusions

We met our primary outcome of increasing the screening of ID in patients with ADHF by 11%. Not only that but also the number of patients discharged on P.O. iron increased by 6%. However, we did not meet our secondary goal of increasing the number of patients who received IV iron. We think further discussions with the residents will allow us to reach this goal in the future.

Table 1. Pre and Post Intervention patient characteristics and screening data.

Pre intervention						
Total	Gender		Screened for ID	Hb < 12	Received IV iron	Discharged on P.O iron
	Male	Female				
88	58 (66%)	30 (34%)	42 (47%)	34 (80%)	16 (47%)	9 (10%)
Post intervention						
Total	Gender		Screened for ID	Hb < 12	Received IV iron	Discharged on P.O iron
	Male	Female				
93	53 (56%)	40 (44%)	54 (58%)	45 (83%)	18 (40%)	15 (16%)

Abbreviations: Hb, Hemoglobin; ID, iron deficiency; IV, intravenous; P.O., oral.

CASE REPORT WINNERS
ANNUAL RESEARCH DAY 2024

Winner: 1st Place

"Gall Bladder Carcinoma Masquerading as Bouveret Syndrome as the Initial Presentation"

Hind El Naamani, MD[1]; Adnan Ezici, MD,[2]; Ahmad Al Nawaiseh MD; Syed K. Mahmood, MD, Sandeep Krishnan, MD; Eduardo A. Vega, MD[3]

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Keywords
Bouveret's syndrome, Cholecystoduodenal fistula, Gallbladder cancer, Gallstone, Gastric outlet obstruction

Introduction

Gallbladder cancer (GBC) is a rare yet serious condition that often presents diagnostic challenges due to its non-specific symptoms, which are similar to other biliary disorders. Advanced stages of GBC can lead to rare complications like cholecystoenteric fistulas (CEF) or Bouveret Syndrome, where a gallstone migrates and causes gastric outlet obstruction (GOO). We present a case of a woman who presented with symptoms of GOO but later led to the unexpected discovery of GBC.

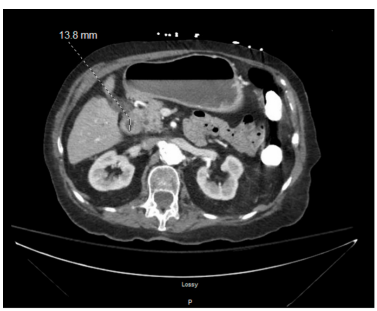
Case Presentation

A 75-year-old female with a history of breast cancer and non-small cell lung cancer treated with surgical resection and radiotherapy presented with abdominal discomfort, postprandial emesis, and weight loss. On examination, vitals were stable. Physical exam notable for abdominal distention with right upper quadrant (RUQ) tenderness. Laboratory tests showed leukocytosis (12.9 x10^9/L), elevated C-Reactive Protein (18 mg/ld.), hypoglycemia (52 mg/dL), decreased albumin (2.3 g/dL). Liver function tests and lipase were within normal range. A Cat scan of the abdomen showed GOO and a possible infiltrating gallbladder lesion. Endoscopy revealed partial GOO at duodenal level. Duodenal biopsy showed peptic injury. Magnetic Resonance Cholangiopancreatography revealed a decompressed gallbladder with inflammation in the gallbladder fossa and around the adjacent pylorus, but no mass causing GOO was found. Instead, a potential stone in the pyloric channel was observed, possibly resulting from erosion

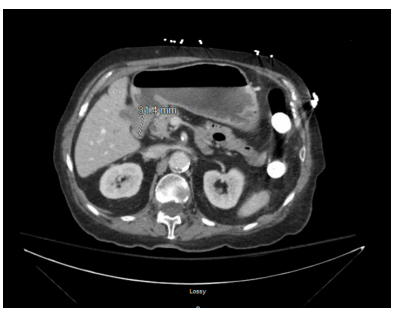
from the adjacent gallbladder (suspicion of Bouveret syndrome). After clinical improvement and confirming no fistulous tract with radiology, surgical intervention was not advised, leading to her discharge home. However, she presented 2 weeks later with similar presentation. New CT demonstrated a 3 cm narrowing of the second duodenum and a 13 mm gallstone embedded in the wall of the second part of duodenum. Repeat EGD revealed GOO due to extrinsic compression of the duodenal lumen. Consequently, the patient underwent a open cholecystectomy, gallbladder-duodenal fistula take down, and Billroth 2 gastro-jejunal anastomosis. Intraoperatively, significant findings included a gallbladder-duodenal fistula and adherence of the duodenum to aorto-caval space. Postoperative pathology showed well-differentiated gallbladder adenocarcinoma with perimuscular connective tissue spread. Lymph node involvement could not be determined due to the specimen rupture. Tumor was staged as T3NxM0.

Discussion

GBC is a rare but significant type of cancer, accounting for half of all biliary tract cancers and the fifth most common gastrointestinal (GI) cancer. Its diagnosis is often delayed due to non-specific symptoms, which can range from none to vague GI complaints like abdominal pain, nausea, and jaundice. An unusual complication of GBC is CEF, it occurs in a small fraction of patients and complicates diagnosis due to its non-specific symptoms. Another rare condition, Bouveret syndrome, involves a migrating gallstone causing an obstruction in the GI tract resulting in GOO. This case presents a patient with GBC manifesting as Bouveret syndrome, highlighting the complexity of diagnosing and managing such cases of concurrent biliary conditions. Despite ongoing surveillance for her known lung cancer with Positron Emission Tomography scan (PET), GBC was not detected until advanced stages, highlighting the difficulties in early detection and the need for vigilance.



13.8 mm noncalcified gallstone appears to be embedded in the wall of second duodenum. Gallbladder is decompressed but significantly adherent to the liver.



3 cm long narrowing of the second duodenum. Third and distal duodenum are normal caliber with wall normal wall thickness.

Winner: 2nd Place

Fluid Overload-Associated Large B-Cell Lymphoma (FOLBCL) Mimicking Congestive Heart Failure in a Nonagenarian Patient A Case Report and Literature Review

Mutaz Abualshar (a), Oliver Darwish (a), Mariana Hattar (a), Olga Kozyreva (b).

a. St. Elizabeth's Medical Center, Boston, Massachusetts, USA. b. Dana-Farber Cancer Institute at St. Elizabeth's Medical Center, Boston, Massachusetts, USA

Introduction

A 91-year-old woman with a history of diastolic heart failure presented with worsening dyspnea and respiratory failure secondary to chronic bilateral pleural effusions, which were refractory to diuretics. Diagnostic thoracentesis revealed exudative fluid, and flow cytometry identified HHV8-negative fluid overload-associated large B-cell lymphoma (FOLBCL). The patient's respiratory failure, oxygen dependency, and pleural effusion resolved following treatment with single-agent rituximab. This case underscores the necessity for a comprehensive diagnostic approach in atypical presentations of pleural effusions.

Case Presentation

A 91-year-old woman with a history of diastolic heart failure (EF 60%), complicated by chronic bilateral pleural effusions, was admitted due to hypoxic respiratory failure from worsening pleural effusion, presumed to be due to diastolic heart failure. Chest X-ray revealed interstitial opacities, mild airspace opacities in the right upper lobe, large left-sided and small right-sided pleural effusions, and cardiomegaly (Figure 1, left). Therapeutic and diagnostic thoracentesis yielded exudative fluid, and flow cytometry identified a population of HHV8-negative monoclonal large B cells consistent with fluid overload-associated large B-cell lymphoma (FOLBCL). A PET/CT scan demonstrated bilateral FDG-avid pleural effusions with uptake in the posterior pleura and right upper lobe, suggestive of lymphomatous involvement. Palliative treatment with weekly single-agent rituximab led to the resolution of respiratory failure, near resolution of pleural effusions (Figure 1, right), and improvement in the quality of life. The patient is currently on maintenance rituximab every 8 weeks.

Discussion

Fluid overload-associated large B-cell lymphoma (FOLBCL) is a newly described entity in the fifth edition of the World Health Organization (WHO) Classification of Hematolymphoid Tumors (WHO-HAEM5). It refers to malignant lymphoma presenting with symptoms of serous effusions in body cavities (pleural, peritoneal, and/or pericardial) in the absence of an identifiable tumor mass, and it poses significant diagnostic challenges due to its uncommon presentation. FOLBCL is different from previously described primary effusion lymphoma (PEL) as PEL is strongly associated with HHV-8 infection with high prevalence in HIV patients

which made it considered to be an HIV-related lymphoma. However, between 2010 and 2020, several series of cases and review articles drew attention to HHV8-negative effusion-based lymphoma in immunocompetent patients called PEL-like lymphoma or HHV8-unrelated PEL-like lymphoma, newly classified as FOLBCL. This rare case highlights the need to consider atypical presentations of malignancy, especially when effusions are refractory to standard treatments. Maintaining a broad differential diagnosis for pleural effusions is important, particularly in the outpatient setting, where more common causes like congestive heart failure often predominate.

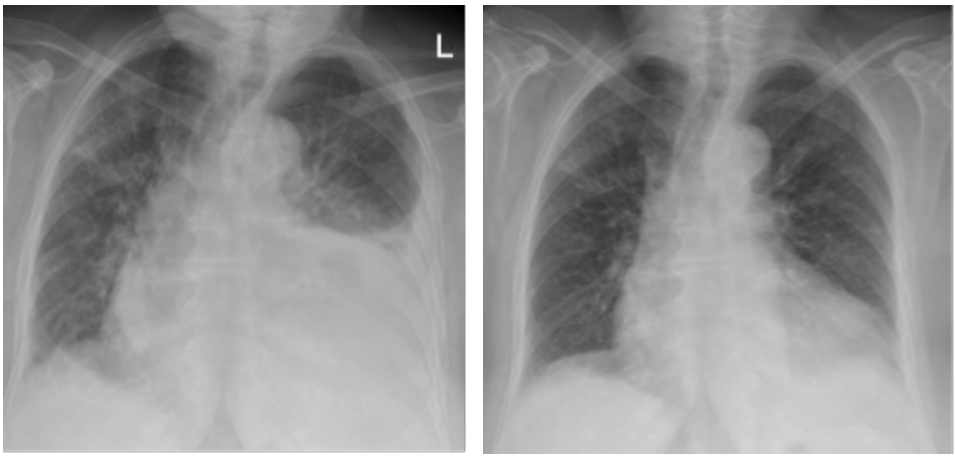


Figure 1. (Left) Chest x-ray on initial presentation with small right and large left pleural effusions, interstitial opacities, mild airspace opacities in the right upper lobe, and cardiomegaly. (Right) CXR one month after fourth cycle of rituximab revealing trace effusion on the right and small effusion on the left.

Winner: 3rd Place

A Spicy Twist: Lingual Paresthesias and Gustatory Disturbances in Symptomatic Anemia Secondary to Severe B12 Deficiency

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William Moore, MD, MSc; Resident Steward Carney Hospital
Marina Khan, MD; Chief Resident Steward Carney Hospital
Nyssa Melendez Rios, MD; Clinical Professor Steward Carney Hospital

Abstract

Introduction

Cobalamin, also known as Vitamin B12, is a water-soluble B vitamin with a pivotal role in cellular metabolism through its role in DNA synthesis, methylation, and mitochondrial metabolism. Due to its systemic wide ranging essential functions, deficiency can lead to a spectrum of clinical manifestations, ranging from the classic hematological and neurological abnormalities, to vague subclinical presentations with nonspecific symptoms.

Classic hematological manifestations include macrocytic anemia, fatigue, and pallor. Neurological consequences of vitamin B12 deficiency are equally significant and can include cognitive impairment, peripheral neuropathy, and subacute combined degeneration of the spinal cord. Deficiency can even lead to the development of psychiatric symptoms such as delusions, disorganized thought-process, and auditory and visual hallucinations. The diverse and nonspecific nature of these symptoms can pose diagnostic challenges.

Description of Case

We describe the case of a 63-year-old male who immigrated from Haiti five years ago, with no prior healthcare access, who presented with two months of progressively worsening dyspnea on exertion and fatigue.

Six months prior, he frequently exercised at the gym and played soccer while being fully independent at home. During this time frame his activity level gradually declined to where he was no longer participating in these activities and began to experience dyspnea that negatively impacted his activities of daily living requiring him to become dependent on friends for assistance.

Upon presentation, the patient described foods such as plain white toast as spicy, which severely limited the contents of his diet. Additionally, the patient experienced financial and food insecurity after becoming unemployed. The gustatory disturbance and food insecurity contributed to the patient consuming a heavily restricted diet characterized by limited animal product intake and a deficiency of vegetables.

Physical examination revealed a thin male, and was overall unremarkable apart from distal lingual erythema (Figure 1).

Labs demonstrated severe macrocytic anemia and unmeasurable vitamin B12 levels, markedly elevated LDH, and elevated anti-intrinsic factor antibodies. Microbiology testing resulted positive for Helicobacter pylori infection. Peripheral blood smear was notable for macrocytosis with hypochromia (Figure 2).

The patient was managed with several PRBC transfusions and aggressive intravenous vitamin B12 repletion which led to rapid improvement in his fatigue and dyspnea. Additionally, the patient received triple therapy for H. Pylori consisting of Clarithromycin, Protonix, and Metronidazole. Following initial vitamin repletion and initiation of antibiotics therapy, lab values normalized and his gustatory disturbances and glossitis improved, resulting in a progressive expansion in the range of foods he found palatable while in the hospital.

Discussion

This case underscores the necessity of comprehensive evaluation and culturally sensitive care in diagnosing and managing anemia and nutritional deficiencies. This care is particularly important in immigrant populations who frequently experience limited food and healthcare access. Additionally, we explore the association between Helicobacter pylori infection, prevalent among these populations, and anti-intrinsic factor antibodies and their role in the development of vitamin B12 deficiency. This patient presented with rapidly developing neurological deficits, a high concentration of anti-intrinsic factor antibodies, and demonstrated the rare finding of elevated LDH secondary to severe vitamin B12 deficiency.

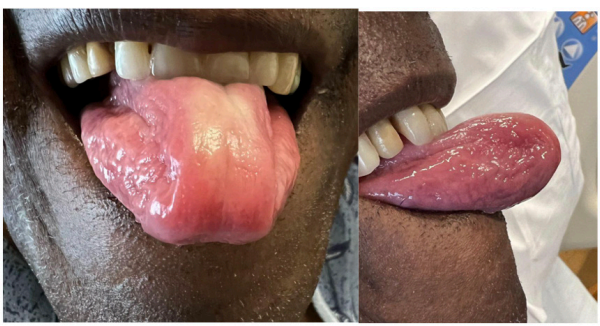


Figure 1. Anterior and lateral photographs demonstrating distal erythema smooth dorsal surface suggestive of glossitis.

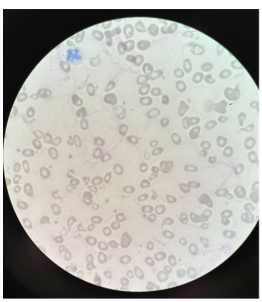


Figure 2. Photograph of peripheral blood smear collected before the initiation of treatment demonstrating many macrocytes and diffuse hypochromia, as well as a hypersegmented neutrophil.

Honorable Mention

Unique case of triple trouble: Pembrolizumab associated myocarditis with myositis and seronegative myasthenia gravis

Surik Sedrakyan, MD; Adnan Ezici, MD; Maha Ahmad, MD. Olga Kozyreva, MD, Dana-Farber Cancer Institute at St. Elizabeth's Medical Center

Introduction

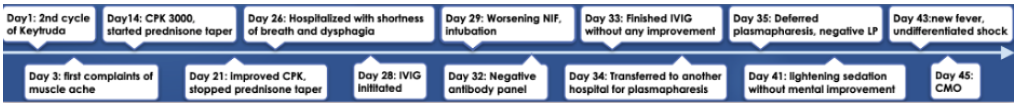
In the ever-evolving landscape of cancer treatment, immune checkpoint inhibitors have emerged as a revolutionary therapeutic approach over the past decade. These agents, while offering unprecedented advancements, come with a spectrum of immune-related adverse events (irAEs) that can pose substantial clinical challenges. Among these complications, myocarditis with myositis and/or myasthenia gravis (MG) overlap syndrome (IM3OS) stands out as a rare condition associated with significant morbidity and mortality. Approximately 70 cases of IM3OS have been documented in the medical literature. While the majority of cases are seropositive to MG, we present a unique case of IM3OS with a classical clinical picture of seronegative MG. Additionally, the patient exhibited orthopnea, which was presumably affected by all three components of the syndrome. The management of this case was challenging due to the absence of autoimmune markers, potentially impacting the outcome.

Case Presentation

This is a case of an 84-year-old man with high-grade non-muscle-invasive papillary urothelial carcinoma resistant to BCG treatment, who opted for pembrolizumab therapy. Two days following the second dose of pembrolizumab, he presented with muscle aches and weakness with a CPK level of 3000 suggesting immune checkpoint inhibitor-related myositis for which a short prednisone taper was started. In the ensuing week, despite improvement in CPK levels, the patient had been experiencing difficulty lying flat, along with dysphagia, and drooping eyelids. He was eventually hospitalized and was found to have a new right bundle branch block and highly elevated troponins with no echocardiographic changes. On exam, the patient was exhibiting mild bilateral ptosis worsened by prolonged upward gaze and muffled voice. Methylprednisolone 2mg/kg and IVIG 0.4mg/kg were initiated. In subsequent days, despite the therapy, the negative inspiratory force index (NIF) was declining, prompting a planned intubation. Interestingly, his anti-MG antibodies, including mitochondrial M2 IgG Ab, Actin IgG, acetylcholine receptor blocking antibody, and acetylcholine receptor binding antibodies came back negative. Electromyography findings were consistent with inflammatory myositis but were not technically satisfactory to assess for neuromuscular junction disorder. With no response to 5 days of IVIG and methylprednisolone, the patient was transferred to another facility for plasmapheresis. Unfortunately, plasmapheresis was deferred given negative antibodies. The patient subsequently deteriorated with increased vasopressor requirement and unexplained fever. The decision was made by the family for the transition of the patient to comfort measures only given the poor prognosis.

Discussion

IM3OS is a rare type of irAEs associated with significant morbidity and mortality that faces a lot of challenges in the diagnosis and treatment strategies. In our case, the initial challenge arose in attributing orthopnea to myocarditis, a presumption questioned by echocardiography revealing normal left ventricular function. This redirected our focus to explore the intricate components of IM3OS, particularly respiratory muscle involvement. Specifically, we considered MG affecting the diaphragm, contributing to the patient's orthopnea. Subsequently, the absence of specific antibodies posed a significant hurdle, leading to the deferred plasmapheresis decision and, unfortunately, a less favorable outcome. This highlights the imperative need for clinical-based diagnoses, especially considering the approximately 10% of reported seronegative cases.



Honorable Mention

Bouveret Syndrome: A Rare Cause of Gastric Outlet Obstruction

Maram Alenzi[1], MD; Iyiad AlAbdul-Razzak[1], MD; Dimo Dimitrov[1], MD; Eduardo Vega[2], MD; Syed Kashif Mahmood[1], MD.

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[2]Divison of General Surgery, St. Elizabeth's Medical Center, Boston University School of Medicine, Boston, MA

Introduction

Bouveret syndrome stands out as a distinct and rare complication of cholelithiasis (1-3%) with high mortality rate ranging from 12-30%. This unique condition arises when a gallstone traverses a cholecystoduodenal fistula, entering the duodenum and subsequently causing gastric outlet obstruction. Delay in diagnosis is associated with a high mortality rate. Here, we aim to present a rare case of Bouveret syndrome.

Case presentation

A 66-year-old female with a past medical history of obesity and hyperlipidemia presented with a one-week history of abdominal pain, nausea, and vomiting. On presentation, her vital signs were normal. Her blood work was notable for leukocytosis to 16.2 x 10^3 /ul. Liver function test was within normal limit apart from mildly elevated alkaline phosphatase at 114 U/L. Computed tomography (CT) revealed features of acute cholecystitis, cholecystoduodenal fistula, pneumobilia, and multiple gallstones the largest of which was 5-cm in size eroding the duodenal bulb. Also, the stomach was distended on the CT suggestive of gastric outlet obstruction and establishing a diagnosis of Bouveret syndrome (Figure 1). The patient was started on intravenous antibiotics. A total of three endoscopic procedures were performed to fragment the duodenal bulb portion of the stone using electrohydraulic lithotripsy. While lithotripsy successfully cleared the gastric outlet obstruction, the entire stone could not be removed due to its large size (Figure 2A,B). Hence, the patient underwent open gastrotomy with successful removal of several large stones in the duodenal bulb and the cholecystoduodenal fistulous tract. Post-operatively, the patient recovered well and remained asymptomatic. A follow-up esophagogastroduodenoscopy (EGD) six weeks later confirmed the closure of the fistula.

Discussion

Bouveret syndrome is an exceedingly rare complication of gallstone disease diagnosed based on clinical presentation and abdominal imaging findings. Due to its rarity, there is no standardized treatment approach. Typically, endoscopic stone extraction or lithotripsy is preferred due to its safety and minimal invasiveness. However, if endoscopic methods are unsuccessful, surgery

may be necessary. Our patient was successfully treated with a combination of antibiotics, therapeutic endoscopy, and exploratory laparotomy. This case highlights the critical role of multidisciplinary team approach to facilitate early diagnosis and the use of both endoscopic and surgical interventions to minimize invasiveness and ensure timely extraction of the obstructing stones.

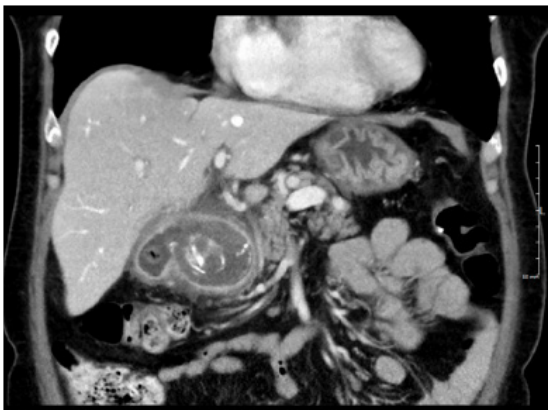

Figure 1: CTAP revealed the presence of gallstones and a cholecystoduodenal fistula with a large calcified stone

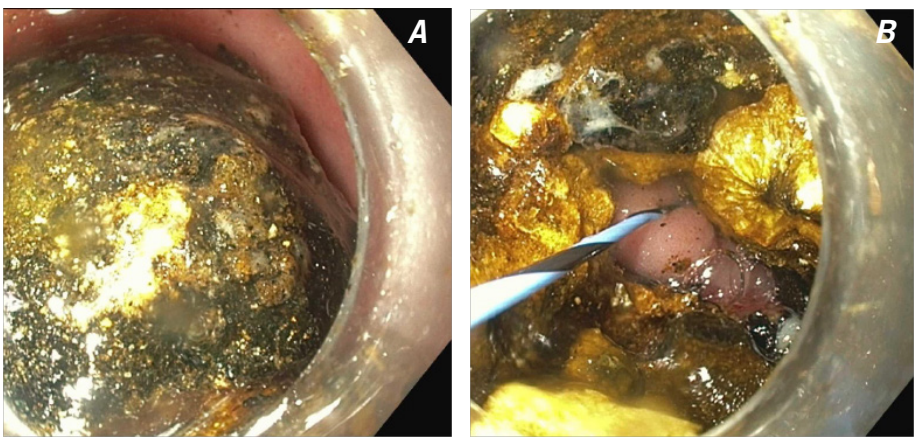

Figure 2: A) Endoscopic visualization of the fistulizing stone before lithotripsy, B) Partial stone fragmentations after lithotripsy

Honorable Mention

Pulmonary Artery Intimal Sarcoma: a rare case and literature review

Kahn Dmitry, Yusuf Yalcin, Ahda Solangi, Muhammad Talha Ugurlu, Marina Khan, Zeeshan Solangi

Introduction:

Pulmonary artery intimal sarcomas (PAS) is a rare malignant mesenchymal tumor of major blood vessels and has no specific clinical or imaging presentation. It often presents with nonspecific symptoms, such as chest pain, shortness of breath, fever, and cough, which can lead to delay in diagnosis and treatment.[1] Computed tomography angiogram (CTA) of chest is usually helpful in identifying tumor thrombus in pulmonary vasculature.[2] The definite diagnosis requires evaluation of the tumor tissue by histopathology and immunohistochemistry. The prognosis for intimal sarcoma is poor, with most patients dying within 1-2 years of diagnosis. Early diagnosis and treatment are essential for improving patient outcomes. This case report describes a patient with PAS who presented with cavitary lung lesions and pulmonic valve mass. The patient was treated with broad-spectrum antibiotics for endovascular infection and lung abscess, but his symptoms did not improve. He underwent further evaluation and was ultimately diagnosed with PAS. This case highlights the importance of considering PAS in the differential diagnosis of patients with intracardiac mass/vegetation and cavitary lung lesions, especially when patients do not show classic features of infective endocarditis or pulmonary embolism and lack response to antibiotic therapy or anticoagulation respectively.

Case Presentation

A 69-year-old man with chronic kidney disease stage 4, ventricular tachycardia status post implantable cardioverter-defibrillator (ICD) placement 3 months ago, presented to the emergency department with worsening nonproductive cough, dyspnea on exertion, and fatigue. He had been experiencing these symptoms for several weeks since after the ICD placement. Routine blood tests showed reactive leukocytosis. CT chest without contrast showed two adjacent cavitary lesions in the right upper lobe. Blood cultures were obtained, which remained negative. He was started on broad spectrum intravenous antibiotic therapy. A transthoracic echocardiogram was obtained which showed new pulmonary valve regurgitation and decreased right ventricle systolic function. This was followed by a transesophageal echocardiogram (TEE) showing a mobile heterogeneous echo-dense mass attached to the wall of main pulmonary artery and pulmonary valve leaflet with finger-like projections. Mild to moderate pulmonary stenosis and moderate pulmonary regurgitation with severe pulmonary hypertension were also seen. Patient's symptom did not improve with antibiotics and supportive care. He underwent cardiac magnetic resonance imaging (MRI), which confirmed a protruding mass in the right ventricular outflow tract (RVOT) and the pulmonic root. The mass had a broad-based attachment and contiguous thickening of the RVOT and the inferior aspect of the pulmonic root into the main pulmonary artery. These findings were concerning for a neoplastic process. A multidisciplinary team consisting of medical oncologist, cardiologist, cardiothoracic surgeon, and infectious disease specialists reviewed the case, and advised surgical intervention. The patient underwent extraction of ICD prior to surgery and developed saddle pulmonary embolism leading to fulminant cardiogenic shock requiring veno-arterial extracorporeal membrane oxygenation (ECMO) support. After stabilization, he underwent endarterectomy of the RVOT and pulmonary arteries to sub

segmental branches with patch repair, and pulmonic valve replacement. Histopathology of the mass showed a high-grade malignant tumor spreading along the intrapulmonary artery. The tumor cells were spindle to ovoid with vesicular chromatin and nuclear pleomorphism. Immunohistochemical staining supported the diagnosis of PAS.

Discussion

PAS originates from the pluripotent stem cells in the intimal layer of the vessel wall which has multiple differentiation ability. It is a highly aggressive malignant tumor which can spread along the axis of the intimal surface towards the pulmonary valve and RVOT. It can also grow in a nodular cavity and metastasize to the lungs and other organs. Due to the rarity of the disease and lack of specific clinical/imaging presentation leading to misdiagnosis, only few hundred cases are reported in the literature. The median age at diagnosis of PAS is 45-54 years, but cases have been reported in children as young as 2 months and adults as old as 89 years. Early cases of PAS are often asymptomatic, but as the disease progresses, patients may develop symptoms such as cough, hemoptysis, dyspnea and chest pain. These symptoms can also be caused by other conditions, such as pulmonary embolism, congestive heart failure, chronic obstructive pulmonary disease and other chronic cardiopulmonary diseases. As a result, most patients are initially treated for pulmonary embolism based on imaging, and often disease is diagnosed with surgical specimen when patient does not respond to anticoagulation or on autopsy. Other conditions which can present in the similar manner on imaging includes myxoma, lung cancer, mediastinal tumors, and rarely subacute infective endocarditis. The laboratory tests are often non-specific and may show elevated erythrocyte sedimentation rate, reactive leukocytosis, thrombocytopenia (likely due to consumption), and rarely disseminated intravascular coagulation. A transesophageal echocardiogram (TEE) may show an irregular mass arising from the pulmonary circulation as was seen in our patient. However, this finding can be easily missed on a transthoracic echocardiogram (TTE). CTA of the chest may raise suspicion for a pulmonary artery tumor if it shows obstruction of the pulmonary trunk with wall invasion and extension to the RVOT especially when seen with lung nodules. Histopathological examination is the gold standard for the diagnosis of Intimal sarcoma. This can be done through a CT-guided or endobronchial biopsy of the lung lesions, or through surgical resection of the primary tumor or on autopsy. The majority of PAS are poorly differentiated or undifferentiated malignant spindle cell sarcomas, ranging from undifferentiated round cells to spiral-shaped spindle cells, with different characteristics related to myofibroblasts or fibroblasts on histopathology.[8] Neoplastic cells show varying degree of atypia, mitotic figures, and necrosis among cases. Occasionally, epithelium-like neoplastic cells are observed, suggesting that the tissue of origin is a pluripotent stem cell. On immunohistochemical testing, intimal sarcoma shows diffuse expression of vimentin, and occasionally includes SMA, CD34, osteopontin, and CD31. It lacks the epithelium-derived markers, as well as histiocyte-derived and neuroendocrine markers. PAS is a locally invasive and highly metastatic cancer with a very poor prognosis and high relapse rate. At present, the only effective treatment which can prolong the survival in patients with locally advanced PAS is the surgical resection. In untreated patients who are unable to undergo surgery due to advanced right heart failure median survival is only 6 weeks, while, reported median life expectancy in patients undergoing surgical intervention after symptom onset is around 12 to 18 months. In advanced cases who are not candidates for surgery or have metastatic disease, palliative chemotherapy with anthracyclines and ifosfamide is the preferred regimen, with response rates of around 50%. Other treatments that have been used for PAS include radiation therapy, immunotherapy, and targeted therapy. However, these treatments may not be as effective as surgery or chemotherapy. More research is needed in the development of new and more effective treatments for intimal sarcoma in all these areas.

GLP-1 Receptor Agonists, Delayed Gastric Emptying and Aspiration Risk: Utility of POCUS in Decision Making

Abhay Tyagi, Milica Bjelic, Cory Greguske, Yuemei Zhang

Introduction

The use of glucagon-like peptide-1 (GLP-1) agonists for treatment of Type II Diabetes(T2DM) and Obesity has grown exponentially in recent years. However, persistent "full stomach" pose a significant risk of aspiration for patients undergoing procedures under deep sedation and GA. The American Society of Anesthesiology (ASA) has issued guidance recommending holding the medication a week before the surgery and adhering to the current fasting recommendations of two hours for clear liquids and eight hours for solids.[1] In light of this, bedside gastric ultrasound (GUS) is emerging as a useful screening tool to determine gastric emptying. We present two patients who presented at our hospital for elective surgeries who were detected to be "full stomach" by GUS despite adhering to the current ASA fasting recommendations.

Case Description:

Case 1: A 66-year-old female, BMI 32, presented for shoulder arthroplasty surgery. Past medical history was significant for T2DM managed with a weekly dose of 0.5 mg semaglutide, last taken 8 days beofre surgery. GUS was performed that showed "late stage" solid content in the gastric antrum (Figure 1A). Repeat GUS performed four hours later continued to show "late stage" solid gastric content. Ultimately, decision was made to postpone the surgery. When the patient re-presented for surgery 12 days after the last semaglutide dose, GUS confirmed an empty stomach and reassured safe conduct of general anesthesia.

Case 2: This is a case of a 52 years old male, BMI 37, with many comorbidities including obesity and T2DM who presented for elective knee replacement surgery. The patient was prescribed a weekly semaglutide 0.5 mg over a year ago that he was not able to take regularly because of drug shortage. The last semaglutide weekly dose was taken 6 days before presentation and the patient had fasted for 16 hours for solids before the surgery. Preoperative GUS however, showed a "full stomach" with solid content. (Figure 1B). The surgery was postponed for later that month with a longer GP1-agonist hold that resulted in an empty stomach confirmed by pre-operative GUS

Discussion:

Newer GLP-1 receptor agonists, such as, Semaglutide can cause significant slowing of the gastric emptying and pose a risk for aspiration in patients undergoing procedures under deep sedation and general anesthesia. The ASA has issued guidance recommending holding GLP-1 medications a week prior to the surgery, continuation of the current fasting guidelines as well as encouraging the use of GUS for making clinical decisions if available (Figure 2). [1,2] GUS is a relatively cheap and quick point of care modality that carries high sensitivity and specificity of 95% and 97.5 % respectively for detection of "full stomach".[3,4] The two cases we present demonstrate that patients on GLP-1 agonists may persistently have contents in their stomach despite holding their medication for an adequate time and having fasted as per the current

recommendation. While navigating the current times with sparse evidence on how to determine adequate gastric emptying time in such patients, our cases demonstrate the invaluable role of GUS in assisting with perioperative decision-making.

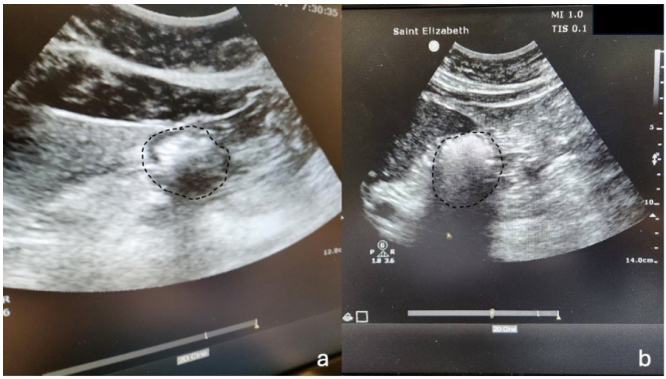

Figure 1a. Gastric ultrasound demonstrating "late stage solids" in patient 1 after fasting >8hrs and witholding semaglutide for 8 days. Figure 1b. Early stage solids with shadows obliterating the structures below in patient 2 who fasted for 16 hours and had withheld semaglutide for 6 days.

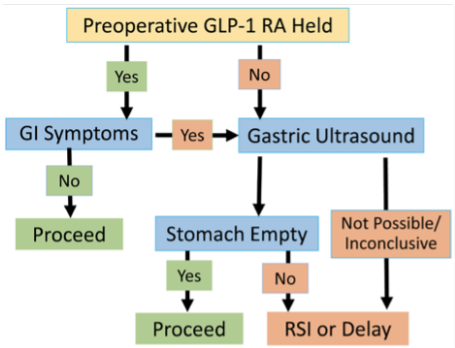

Figure 2. Management of a patient on GLP-1 RA on the day of the procedure.

GI indicates gastrointestinal; GLP-1, glucagon-like peptide-1;

RA, receptor agonist; RSI, rapid sequence induction. Taken from: Joshi G. P. (2024). Anesthetic Considerations in Adult Patients on Glucagon-Like Peptide-1 Receptor Agonists: Gastrointestinal Focus. Anesthesia and analgesia, 138(1), 216–220.

A Case Report of Severe Hypocalcemia Induced by Denosumab in a Cancer Patient

Amal Al Naif, PharmD; Adah Lau, PharmD

Introduction

Denosumab is a monoclonal antibody used in the treatment of osteoporosis, bone metastases, and hypercalcemia of malignancy. It works by inhibiting the activity of osteoclasts, thereby decreasing bone resorption and increasing bone density. Its use can lead to rare but serious hypocalcemia. In January 2024, the Food and Drug Administration (FDA) added a black box warning regarding the risk of severe hypocalcemia in patients with advanced chronic kidney disease (CKD), including those undergoing dialysis. We present a case of severe hypocalcemia in a patient with metastatic prostate cancer following denosumab administration to highlight the unique toxicity and treatment considerations.

Description of case:

We describe a 65-year-old male with metastatic adenocarcinoma of the prostate and bone involvement who presented with symptoms suggestive of chronic obstructive pulmonary disease (COPD) exacerbation. Laboratory investigations incidentally revealed severe hypocalcemia, with total serum calcium levels measuring 4.6 mg/dL (corrected level of 5 mg/dL), ionized calcium levels of 3.5 mg/dL, vitamin D 25-hydroxy level of 29 ng/mL, phosphate level of 1.8 mg/dL, and parathyroid hormone (PTH) level of 269 pg/mL. Notably, the patient was on denosumab, and the last dose was administered two weeks prior to admission, implicating it as a potential trigger for his hypocalcemia state. Treatment included intravenous calcium gluconate administration (total dose 30 grams) followed by oral calcium carbonate 500 mg four times daily, calcitriol 0.75 mcg daily, and vitamin D3 1000 units daily. Over the course of hospitalization, the patient's calcium levels gradually improved to 7.2 mg/dL and was discharged with oral calcium and vitamin D.

Discussion

The case highlights the importance of monitoring patients receiving denosumab therapy. It's crucial to ensure that calcium and vitamin D levels are corrected before initiating denosumab, followed by consistent daily supplementation of both nutrients. Early identification and prompt management of hypocalcemia play a critical role in preventing adverse outcomes and improving patient safety throughout denosumab treatment, especially in individuals with risk factors such as vitamin D deficiency, prostate cancer, bone metastases, male sex and reduced creatinine clearance. Notably, there's currently no standardized treatment guideline for denosumab-induced hypocalcemia, and its duration may be prolonged due to the drug's extended half-life. Given its often incidental detection, it is very important to closely monitor patients receiving denosumab for timely intervention and improved clinical outcomes.

A Rare Case of Severe Hypocalcemia with Prolonged Hospitalization After Single Dose of Denosumab in Metastatic Prostate Cancer

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Introduction

Bone is the third most common location for metastases, often leading to significant morbidity. Denosumab, a monoclonal antibody targeting the Receptor Activation of Nuclear factor-Kappa Ligand (RANKL), is commonly used to prevent skeletal-related events (SREs) in patients with bone metastases. These events encompass fractures, spinal cord compression, and radiation or surgery-related pain. Hypocalcemia is a known adverse effect associated with Denosumab, sometimes severe, necessitating prolonged hospital stay. We present a rare case of a metastatic prostate cancer patient with extensive bone metastases experiencing severe hypocalcemia following a single dose of denosumab, necessitating 10 days of in-hospital high-dose calcium supplementation.

Case Description

A 65-year-old male with a medical history of diabetes mellitus, COPD, and prostate cancer with diffuse osteoblastic metastases complicated by T3-T5 cord compression, post palliative radiation treatment, presented to the hospital on January 12th 2024 with fatigue and carpopedal spasms. His cancer treatment included androgen deprivation therapy (GnRH antagonist Degarelix and antiandrogen Abiraterone), combined with prednisone. He received a subcutaneous injection of denosumab 120 mg on January 4th, 2024. On presentation, his vital signs were within normal limits, and electrocardiogram revealed normal sinus rhythm with QTc of 433 ms. Physical examination was unremarkable however the status of Chvostek's and Trousseau's signs was unclear. Laboratory evaluation showed total calcium 4.6 mg/dl, ionized calcium 0.8 mM/L, albumin 3.5 g/dl, magnesium 2.1 mg/dl, alkaline phosphatase 1106 U/L, 25-OH vitamin D 29.0 ng/ml, and parathyroid hormone 296 pg/ml. Laboratory evaluation the day prior to denosumab administration showed total calcium 8.8 mg/dl, albumin 3 mg/dl, and 25-OH vitamin D 30.0 ng/ml suggesting denosumab-induced hypocalcemia. He was treated with intravenous calcium gluconate, oral calcium carbonate 500 mg four times daily, and calcitriol 0.5 mcg a day. Calcium levels were monitored every 4–6 h on the first day, with gradual improvement over the next several days. He was discharged on oral calcium 1000 mg four times daily and calcitriol 0.75 mcg per day. At one-month follow-up, calcium level was 8.3 mg/dl, indicating good response and adherence to treatment.

Discussion

Advanced prostate cancer leads to bone metastases in up to 90% of cases. Denosumab is preferred over bisphosphonates as it significantly delays time to SREs. However, denosumab inhibits osteoclast activity, which can lead to decreased calcium release from bone and

subsequent hypocalcemia. Risk factors including extent of metastatic bone disease, insufficient calcium intake, vitamin D deficiency, chronic kidney disease, and prior bisphosphonate use, increase susceptibility to denosumab-induced hypocalcemia. Prophylactic oral calcium and vitamin D are recommended to decrease the risk of hypocalcemia after denosumab administration. When severe hypocalcemia occurs, hospitalization is necessary for aggressive calcium repletion. The only predisposing factors for severe hypocalcemia in our case was extensive osteoblastic metastases and non-compliance with prophylactic supplementation after denosumab leading to prolonged hospitalization. This case highlights the increased morbidity and healthcare cost associated with denosumab-induced hypocalcemia. We suggest implementing emphasized patient education and surveillance/treatment protocol for patient receiving Denosumab.

Unusual Presentation of Salmonella Bacteremia Mimicking Aspiration Pneumonia in an Elderly Immunocompetent Patient

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William Moore, MD, MSc; Resident Steward Carney Hospital

Marina Khan, MD; Chief Resident Steward Carney Hospital

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Introduction

Salmonella species, belonging to the Enterobacteriaceae family, are facultative anaerobic bacteria commonly associated with foodborne illnesses, with Salmonella enterica being the most clinically significant species. Transmission occurs primarily through the ingestion of contaminated food or water, although direct contact with animals or their environments can also lead to infection. Following ingestion, Salmonella organisms invade the intestinal epithelium, causing enterocolitis typically associated with gastrointestinal symptoms such as diarrhea, abdominal pain, and fever, which may also result in bacteremia.

The elderly population, especially those with underlying comorbidities or immunocompromised states, are at increased risk of Salmonella infections. The occurrence of Salmonella bacteremia in immunocompetent individuals, particularly with an initial presentation of aspiration pneumonia, is exceedingly rare and warrants careful consideration. Aspiration pneumonia, characterized by pulmonary inflammation and infection resulting from the inhalation of oropharyngeal contents, typically occurs in individuals with predisposing factors such as impaired consciousness, dysphagia, or compromised airway protective mechanisms, all common phenomena in the elderly. While bacterial pathogens such as Streptococcus pneumoniae and Haemophilus influenzae are commonly implicated, Salmonella species infrequently cause aspiration pneumonia, making this case particularly noteworthy.

Description of Case

We present the case of a 97-year-old female with past medical history significant for interstitial lung disease, cardiac pacemaker, and gastroesophageal reflux disease who presented to the emergency department due to several days of weakness associated with cough, fatigue, and subjective fevers, but notably devoid of gastrointestinal symptoms. Initial physical exam revealed a fully alert and oriented elderly female in no acute distress, and was unremarkable apart from bibasilar rales, mild bilateral pretibial edema, and a small hyperpigmented stage one sacral ulcer. On admission, a chest radiograph was obtained which illustrated low lung volumes bilaterally without evidence of infiltrate or effusion. A chest CT demonstrated esophageal distention along with a right lower lobe infiltrate. History of GERD, sacral ulcer suggestive of limited mobility, and right lower lobe infiltrate were all suggestive of likely aspiration pneumonia.

The patient was admitted to the medical floor and blood cultures were collected prior to initiation of intravenous ceftriaxone and metronidazole. Due to mild hypervolemia on exam, gentle

diuresis was initiated with intravenous lasix. The blood cultures initially grew gram negative rods which prompted a transition to intravenous ampicillin-sulbactam therapy and collection of repeat blood cultures. Speciation of the initial blood cultures revealed salmonella with sensitivities to ciprofloxacin and trimethoprim-sulfamethoxazole. Following consultation with infectious disease, the patient was transitioned to ciprofloxacin IV therapy for a planned total of ten days, which upon discharge was changed to oral ciprofloxacin. Repeat blood cultures collected during hospitalization did not result in any microbial growth, suggestive of effective clearance of bloodstream infection.

Discussion

Salmonella bacteremia should be considered in the differential diagnosis of elderly patients presenting with respiratory symptoms, even in the absence of overt gastrointestinal symptoms. Early recognition and appropriate antimicrobial therapy are crucial in optimizing outcomes in such cases. This case report emphasizes the necessity of a broad differential approach and thorough microbiological investigation in the evaluation of elderly patients with suspected infectious etiologies.

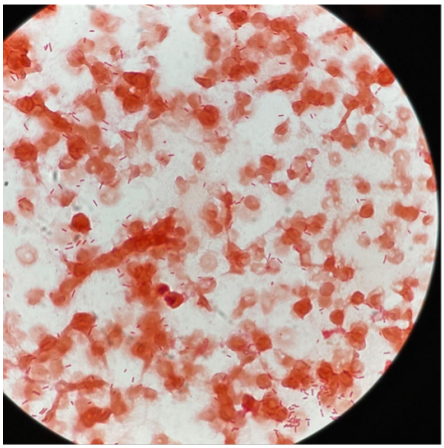

Figure 1) Gram stain of blood culture demonstrating the presence of scattered gram negative rods.

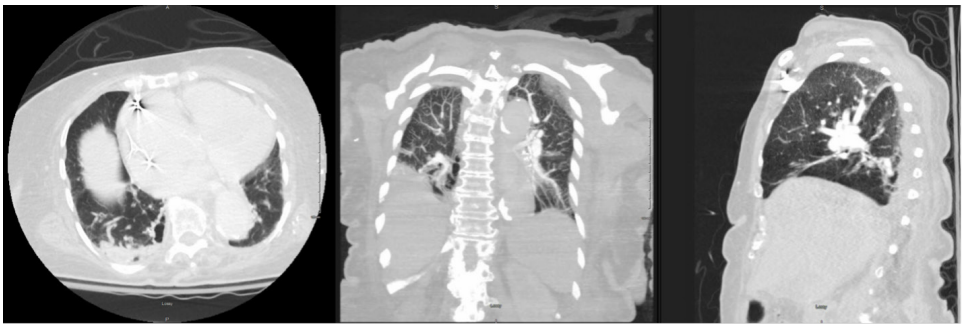

Figure 2) Axial, coronal, and sagittal slices of a contrast enhanced computed tomography chest, abdomen and pelvis, demonstrating right lower lobe infiltrate with small effusion, likely from aspiration in the setting of distended fluid filled esophagus.

Losing Weight, Gaining Options: Enhancing Surgical Eligibility in Prostate Cancer through Multidisciplinary Approach to Weight Loss

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Introduction

We describe the case of a 66-year-old male with class III obesity and unfavorable intermediate-risk prostate cancer, initially deemed unsuitable for prostatectomy due to a BMI of 42. Through a multidisciplinary approach, including intensive structured lifestyle modification and treatment with metformin and a GIP/GLP-1 receptor agonist, the patient lost 50 pounds, he became a surgical candidate. This case demonstrates how new weight loss strategies can improve surgical eligibility for obese cancer patients.

Case Presentation:

A 66-year-old male with class III obesity (BMI 42) and multiple comorbid conditions, including type 2 diabetes, obstructive sleep apnea, and knee osteoarthritis limiting mobility, was diagnosed with unfavorable intermediate-risk prostatic adenocarcinoma (Gleason score of 4+3=7, initial PSA of 12.8). A PSMA scan revealed uptake only in the left hemiprostate, with no evidence of PSMA-avid metastatic disease. Evaluated by a multidisciplinary team including urology, radiation oncology, and medical oncology, the patient was deemed not a surgical candidate due to his BMI/body habitus and comorbid conditions. An alternative definitive treatment involving external beam radiation therapy (EBRT) combined with 6 months of androgen deprivation therapy (ADT) was recommended but was less desirable due to the associated weight gain from ADT and the patient's preference for surgery. ADT with the GnRH receptor antagonist relugolix was initiated, and the patient was referred to a weight management specialist, a nutritionist, and a structured exercise program. Treatment with structured exercise, metformin and a GIP/GLP-1 receptor agonist (tirzepatide), along with meal replacement therapy, was initiated. Within the next 4 months, the patient achieved a 50-pound weight loss despite secondary hypogonadism. This significant weight reduction made the preferred curative surgical treatment viable, enhanced his quality of life and opened other options like knee replacement.

Discussion

This case illustrates the complexities and interdependencies of obesity, comorbid conditions, and cancer treatment eligibility, emphasizing the significance of novel weight loss therapies combined with lifestyle interventions in managing obese patients with cancer. Obesity is associated with a higher risk of death from prostate cancer and treatment complications. Further studies should explore the role of weight loss interventions in patients with prostate cancer. This case also highlights the critical role of a patient-centered, multidisciplinary approach in navigating treatment decisions, particularly when conventional pathways are obstructed by obesity, thereby expanding treatment options and potentially improving patient outcomes.

Sevelamer Associated Cecal Ulcer

Maria A. Luna Cuadros, MD; Carney Hospital, Tufts School of Medicine, Harinder Singh, MD; Carney Hospital, Tufts School of Medicine

Introduction

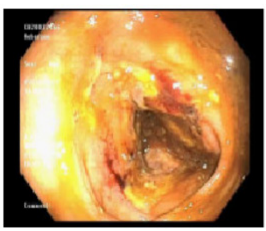
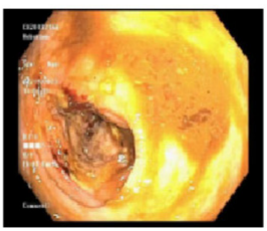
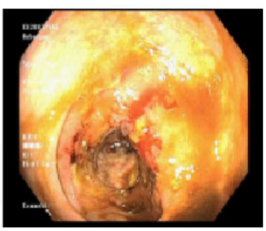
Phosphorus homeostasis is critical in end-stage renal disease (ESRD), as it correlates with long-term outcomes and life expectancy. Sevelamer is a common treatment for hyperphosphatemia. Common side effects are diarrhea, dyspepsia, nausea and vomiting. More severe side effects are obstruction, necrosis and ulcers of the GI tract. A case of an elderly male with ESRD on dialysis and hyperphosphatemia treated with sevelamer, who had lower gastrointestinal bleeding is presented. The colonoscopy revealed a large ulcerative cecal mass consistent with an ulcer secondary to sevelamer.

Case Presentation

83-year-old male with ESRD on hemodialysis comes with painless hematochezia. He had a history of constipation and hemorrhoids. His medications were insulin, antihypertensives, and sevelamer. Initial hemoglobin was 6.9 g/dL. He received a transfusion prior to colonoscopy that showed an ulcerated, partially obstructing, large mass in the cecum involving two-thirds of the lumen's circumference and was about 5 cm in length and 5mm in diameter. Biopsies revealed a benign colonic ulcer with inflamed granulation tissue. Multiple exogenous crystals were embedded within the granulation tissue. Given their morphology and yellow-orange color, these were consistent with sevelamer crystals. Sevelamer was discontinued, hematochezia did not recur and hemoglobin remained stable for the remainder of his stay.

Discussion

Morbidity and mortality are increased in elderly with gastrointestinal bleeding. Comorbidities and polypharmacy increase their risk of death. Colonoscopy findings of an ulcerated mass can indicate malignancy, inflammatory bowel disease or infection. Concerns for malignancy given age, hematochezia and constipation in this case. A colonoscopy and biopsy were critical to diagnose a benign ulcer due to sevelamer. Sevelamer is used to treat secondary hyperparathyroidism in ESRD. It is preferred due to its minimal effect on calcium levels and its tolerability. Severe side effects, such as GI bleeding, have scarcely been described. Underlying mechanisms are not clear though it is suggested that dysfunctional intestinal barriers interacting with sevelamer crystals predispose neutrophil traps formation, inflammation, perforation and peritonitis. Risk factors for dysfunctional intestinal barrier are constipation, hypoperfusion, surgery, NSAIDs and ESRD. Direct interaction of sevelamer crystals with a dysfunctional barrier activates an inflammatory response that leads to ulceration and bleeding. Sevelamer epithelial injury can be present throughout the GI tract.

Atraumatic Spontaneous Splenic Rupture Secondary To Tick-Borne Infection

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Introduction

Atraumatic spontaneous splenic rupture is a rare but life-threatening condition most commonly caused by infectious disorders, hematological disorders, and localized inflammatory and neoplastic disorders.1 We present a case of a spontaneous splenic rupture in a patient with co-infection of Lyme and Babesia.

Case Presentation

A 61-year-old male initially presented with low-grade fever, intermittent left-side chest pain, lightheadedness/presyncope in a standing position, and small redness under the left arm. Three weeks prior he had a rash on his left arm and back which was felt to be shingles and he was treated with valacyclovir. Initial workup showed a hemoglobin of 11.7, a positive Lyme IgG and IgM, Babesia smear with 1.6% parasitemia. He was started on Doxycycline, Azithromycin, and Atovaquone and discharged home. On day three after discharge, he re-presented to the hospital with severe left-side chest pain radiating to the left shoulder aggravated by deep breathing and severe lightheadedness limiting his ability to stand up. Urgent laboratory evaluation revealed normocytic anemia with hemoglobin 10.3g/dl, hematocrit 30.8%, thrombocytopenia 69 per microliter of blood, bandemia of 11.8%, and hyponatremia 131 mmol/L. Vital signs showed significant hypotension requiring vasopressor support. Computerized tomography of the abdomen showed splenic rupture. He underwent urgent Interventional radiology-guided splenic artery embolization. His condition improved clinically and was discharged home in three days.

Discussion

Tick-borne diseases like Lyme, Babesia, Ehrlichiosis, and Anaplasmosis are common in the Northeastern United States and usually seen in co-infection due to persistent in similar vectors like Ixodes ticks. While many have a benign course if diagnosed in the early stages, some require ICU level of care due to severe life-threatening complications like spontaneous splenic rupture.

Due to its uncommon occurrence and high mortality rate, it is crucial to identify a spontaneous splenic rupture and its cause at an early stage. Splenic rupture can be managed conservatively, with IR-guided embolization as in our patient, or even splenectomy in severe cases. When determined to be from Babesia, antimicrobial treatment with Atovaquone plus Azithromycin for 7-10 days is the standard treatment. If there is a co-infection with Lyme disease like in our patient, Doxycycline for 14-21 days should be added.

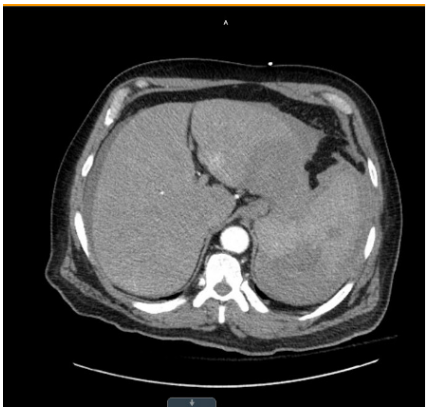


Figure-1: CT Abdomen axial view shows splenic rupture

An exceptionally rare case of statin induced autoimmune necrotizing myopathy treated with intravenous immunoglobulin.

Ahda Solangi, M.D, Yusuf Yalcin, M.D, Dmitry Kahn, M.D, Ghulam Shah, M.D, Zeeshan Solangi, M.D, F.A.C.P

Introduction

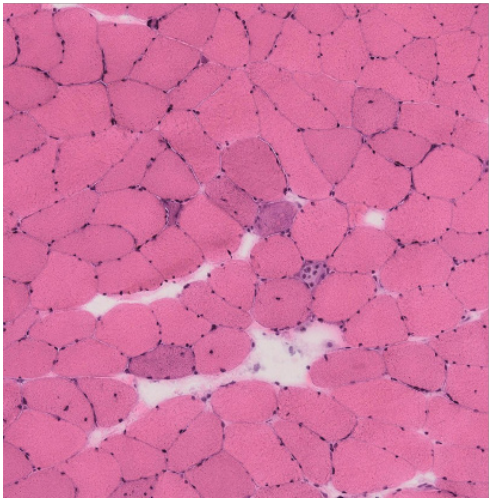
Statin induced immune mediated necrotizing myopathy (SIMNM) is a rare entity characterized by progressive muscle weakness. The usual progression of weakness in SIMNM often exhibits a gradual improvement, highlighting the imperative need for early initiation of immunosuppressive therapy to mitigate the related risks of morbidity and mortality.

Case Presentation

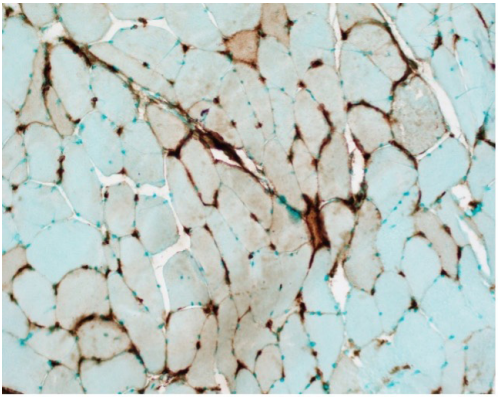
We present a case of 74 years old male with history of hypertension, hyperlipidemia presenting with bilateral lower limb edema and intermittent chest pain. Upon arrival at the emergency department, the patient exhibited stable vitals and was not in acute distress. Initial assessments revealed elevated troponin and transaminase levels, while an electrocardiogram and echocardiogram showed no signs of ischemia. Further imaging done with chest computed tomography angiogram ruled out pulmonary embolism and revealed small pericardial cyst. Elevated liver function tests prompted a creatinine kinase evaluation, resulting in a diagnosis of rhabdomyolysis secondary to statin therapy, indicated by a CK level of 32,400. Throughout the 5-day hospitalization, CK levels gradually decreased from 320,400 to 17,000 with aggressive fluid management. Thyroid panel was normal. Various consultations were sought, including rheumatology, renal, general surgery, and neurology, with electromyography suggesting a myopathic disorder, likely necrotizing. A lower extremity muscle biopsy confirmed autoimmune necrotizing myopathy. Treatment involved IVIG administration (total of 5 doses), continuous renal follow-up to ensure adequate urine output using IV fluids and diuretics, and cessation of amlodipine due to exacerbating leg swelling. Laboratory assessments revealed elevated Anti 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) antibodies, while other panels and tests including anti Jo 1, antinuclear antibodies came back negative, metabolic myositis panel all came back within normal limits. Additionally, his serum aldolase levels were elevated, making aldolase deficiency extremely unlikely. Muscle biopsy result confirmed autoimmune necrotizing myopathy. Most likely suspicion was that the combination of the new prescription of amlodipine on top of his statin increased the statins risk of myopathy/muscle injury. IVIG therapy led to a gradual improvement in the patient's condition, with CK levels initially stabilizing before slowly declining.

Discussion

Statin is one of the commonly prescribed drugs and its side effects of myopathy is well known. However, diagnosing and treating statin induced immune mediated necrotizing myopathy remains challenging. A broad suspicion is warranted whenever there is profound weakness with slow improvement in CK levels. Immune mediated myopathies are generally treated with immunosuppression and warrants sooner diagnosis to avert considerable morbidity and mortality. Our patient had significant improvement with IVIG but experienced a gradual decline in CK levels over several weeks.



Frozen H&E showing scattered necrotic and regenerating fibers.



MHC1 IHC shows multifocal sarcolemma staining.

Iodinated Contrast induced Thyrotoxicosis leading to Takotsubu Cardiomyopathy

Arpit Jain, MD; Elie Naous, MD; Surik Sedrakyan, MD, Ann Teresa Sweeny, MD

St. Elizabeths Medical Center

Background

Thyrotoxicosis may cause many cardiovascular manifestations including tachycardia, hypertension, atrial fibrillation and heart failure. Iatrogenic exposure to iodinated contrast media (ICM) precipitating iodine induced thyrotoxicosis (or the Jod-Basedow phenomenon) is often overlooked. Here, we describe a case of iodine induced thyrotoxicosis leading to takotsubu cardiomyopathy, following multiple exposures to ICM.

Case Presentation

An 88-year-old male with a history of hypertension, dyslipidemia, chronic obstructive pulmonary disease, and an ED visit one month ago for hemoptysis for which a CT Angiography (CTA) of the chest was obtained (which excluded Pulmonary Embolism(PE)), presented with fever and shortness of breath. On physical examination his temperature was 100.3F, heart rate was 104bpm, blood pressure 130/62mmHg, respiratory rate was 20/min and saturation was 88% (room air). He was frail but his examination was otherwise unremarkable. Electrocardiogram (EKG) revealed sinus tachycardia. Chest CTA excluded PE. Transthoracic echocardiogram (TTE) showed an ejection fraction (EF) of 73% and no wall motion abnormalities. He was admitted to the hospital for a viral upper respiratory infection and was treated conservatively with bronchodilators. Odynophagia prompted a CT with contrast of the neck soft tissue, which was unrevealing. He was planned to be discharged the next day, but overnight developed severe abdominal pain, and atrial fibrillation with a rapid ventricular response (Troponin t was 191 ng/L (normal {nl}: <9 ng/L)). EKG showed new T-wave inversions in the anterolateral leads, raising a suspicion of myocardial ischemia. A repeated TTE revealed a new drop in EF from 73 to 41%, with new apical akinesis, suspicious for takotsubo cardiomyopathy. CT of the abdomen with contrast was unrevealing. Lab results showed a suppressed TSH of <0.01uIU/mL (nl: 0.34-5.60 uIU/mL), elevated FT4 of 13ng/dL (nl: 0.93-1.70 ng/dL), and TSI 4.97 IU/ L (nl: 0-0.55 IU/ L). Endocrinology was consulted. His thyroid examination was normal, and he had no eye findings. Neck ultrasound revealed a homogeneous thyroid gland without any nodules. His clinical course was consistent with the diagnosis of acute thyrotoxicosis precipitating takotsubu cardiomyopathy. He likely developed iodine induced thyrotoxicosis from multiple exposures to ICM, in a background of previously undiagnosed Graves' disease.

Discussion

Screening for thyroid disease is critical in patients with new onset tachyarrhythmias and stress cardiomyopathy. Iodine induced thyrotoxicosis typically presents after patients with underlying thyroid disease are exposed to iodinated contrast. Prior to ordering studies requiring ICM, it is important to thoroughly evaluate patients for possible pre-existing thyroid disease.

Optilume® drug coated balloon dilation for complex anterior urethral stricture

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Introduction

Complex anterior urethral strictures including those with prior failed hypospadias repair constitute a therapeutic dilemma. They usually require extensive repair with harvest of long grafts or two/multi-stage repair. Optilume® drug-coated balloon dilation emerges as a possible treatment option with less morbidities and satisfactory functional outcome for such complex urethral strictures.

Case Presentation

An 81-year-old patient developed anterior urethral stricture after TURP in 2017. He underwent periodic urethral dilation every 6 months. He was also performing CIC daily. Evaluation using flexible cystoscope and urethral imaging confirmed the presence of a tight penobulbar urethral stricture. Because of the patient age, and the length and severity of the stricture, the decision was made to proceed for endoscopic treatment of his stricture including Optilume® drug-coated balloon dilation. This new device widens the urethral lumen using balloon dilation and maintains this long-term effect with the circumferential and local application of paclitaxel. Paclitaxel is an antiproliferative chemotherapeutic agent that has been used broadly to prevent restenosis after cardiac angioplasty.

The patient underwent 2 staged procedures with Optilume 2 months apart. The first surgery involved visual urethrotomy and Optilume® drug coated balloon dilation for the bulbar stricture. The second surgery was focused mainly on the penile stricture The urethra catheter was left for 3 weeks postoperative after each surgery.

The patient reported significant improvement of his urine stream 4 months postoperatively without the use of CIC. He denied any hematuria or urinary tract infection. Office cystoscopy revealed very mild anterior urethral stricture which was negotiated successfully and easily with the flexible 16 French cystoscope to the bladder.

Discussion

Although the follow up period was short, this case illustrated the potential of Optilume® balloon dilatation to serve as a minimally invasive treatment option for complex anterior urethral stricture. Being a minimally invasive procedure, it can be repeated and done in a multistage fashion for long strictures. Additionally, this treatment modality can serve as an option for patients that are poor surgical candidates or decline urethroplasty.

A Rare Case of Granulomatosis with Polyangiitis Complicated by Intracranial Hemorrhage

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Introduction

Anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis is characterized by inflammation and necrosis of small, and to a lesser extent, medium-sized blood vessels. There are three distinct diseases, including granulomatosis with polyangiitis (GPA), which typically involves the upper and lower respiratory tract as well as the kidneys. While approximately half of patients with GPA develop symptoms involving the peripheral nervous systems, involvement of the central nervous system is relatively uncommon. Instances of intracranial hemorrhage are particularly rare, with only a few cases reported.

Description of Case

This is a 59-year-old previously healthy woman who presented to the hospital with several months of bilateral asymmetric weakness in her lower extremities, along with dark-colored urine and intermittent skin mottling. On review of systems, she reported a two-year history of chronic sinusitis, recurrent otitis media, intermittent epistaxis, and a five-year history of paresthesia in her lower extremities. At presentation, she had non-oliguric acute kidney injury with an initial serum creatinine of 1.9 mg/dL, peaking at 3.8 mg/dL. The ESR was 46 mm/hour and CRP was 19.5 mg/dL. Immunological and serological testing revealed an elevated level c-ANCA titer at 1:80 (normal <1:20) and anti-proteinase 3 antibody titer at 7.4 units (normal range: 0-0.9 units). Her urinalysis was positive for blood and protein, and the random urine total-protein-to-creatinine ratio was 800 mg/g. She was empirically treated with pulse dose methylprednisolone for a concern of rapidly progressive glomerulonephritis. A kidney biopsy revealed focal necrotizing crescentic pauci-immune glomerulonephritis, and imaging of her sinuses demonstrated mucosal thickening consistent with granulomatous inflammation. A diagnosis of GPA with renal involvement was entertained. Despite prompt treatment initiation, her clinical course took an unexpected turn. After her 3rd dose of pulse steroids, she developed sudden-onset aphasia, right-sided weakness, and altered mental status. An emergent CT scan of the head revealed simultaneous intracranial bleed in three different locations: acute left-sided intraparenchymal hemorrhage with mass effect resulting in a 9 mm midline shift with another hemorrhage in the right frontal lobe, and parietal occipital subdural hemorrhage. She underwent an emergent craniotomy and hematoma evacuation. The patient had not had any head trauma or falls. Brain imaging ruled out underlying tumor, aneurysm, or stroke. In the absence of other explanations, her intracranial hemorrhage was attributed to her GPA with vasculitis involvement of the central nervous system. Given her life-threatening presentation, with both renal and cerebral involvement, her induction therapy consisted of a combination of rituximab and cyclophosphamide. Her renal function and mental status improved significantly

(latest serum creatinine of 2.1 mg/dL), but she unfortunately remained aphasic with right-sided paralysis.

Discussion

Central nervous system involvement in GPA is a rare but life-threatening complication. Hypertrophic meningitis is the most common, but ischemic or hemorrhagic cerebrovascular events can occur, and are thought to be related to diffuse central nervous system angiitis. While prompt diagnosis and initiation of appropriate immunosuppressive therapy are crucial in mitigating disease progression, predictors of GPA related intra-cerebral hemorrhage are not well established. This case highlights the need for close monitoring of unexpected severe complications.

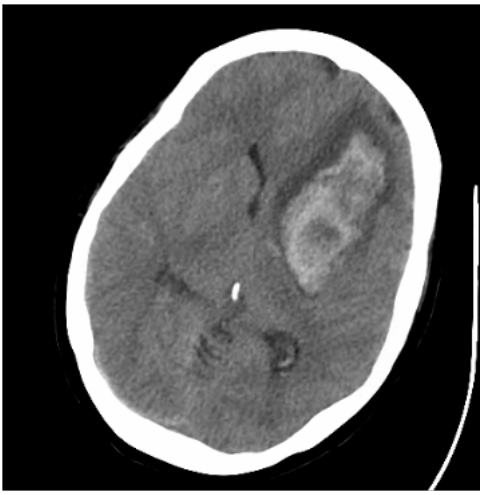

Figure 1. Non-contrast head CT showing the acute left-sided intraparenchymal hemorrhage measuring up to 6-7 cm with mass effect resulting in 9 mm left-to-right midline shift.

Hyperammonemic Encephalopathy associated with 5-Fluorouracil Administration - a Review of Treatment for this Rare Side-Effect of Chemotherapy

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b. Dana-Farber Cancer Institute at St. Elizabeth's Medical Center, Boston, Massachusetts, USA

Abstract

Chemotherapy-induced hyperammonemic encephalopathy (HAE) is a rare and life-threatening condition that necessitates prompt diagnosis and treatment. The rarity and diversity of its presentation, however, pose challenges for systematic review, and there is no established protocol for managing HAE in cancer patients. This condition has been observed in the treatment of various tumors using different cytotoxic chemotherapeutic agents. The particular case discussed herein prompted our review of a proposed treatment algorithm applicable to HAE resulting from the treatment of any tumor or with any suspected offending agent.

Case Presentation

A 34-year-old male with a medical history of chronic inactive hepatitis B initially presented with two years of gastroesophageal reflux disease (GERD) symptoms and a ten-pound weight loss. He was diagnosed with HER2-negative, PD-L1 3%-positive, locally advanced gastric adenocarcinoma of the antrum. After receiving an infusion of 5-fluorouracil (5-FU) as part of his third cycle of neoadjuvant FLOT chemotherapy (Fluorouracil, Leucovorin, Oxaliplatin, and Docetaxel), he developed acute agitation, progressing to obtundation. Laboratory testing revealed the following: sodium at 148 mmol/L, lactic acid at 7.0 mmol/L, ALT at 301 U/L, AST at 71 U/L, total bilirubin at 0.5 mg/dL, and ammonia at 447 µmol/L. The hyperammonemia resolved within 8 hours following volume repletion and cessation of 5-FU, with concurrent improvement in his mental status, negating the need for emergent dialysis. The patient had no memory of the day leading up to his presentation nor of his admission to the intensive care unit. Given this life-threatening episode of hyperammonemia, his treatment was switched to chemoimmunotherapy with oxaliplatin, capecitabine, and nivolumab, considering his tumor PD-L1 expression, which he has tolerated well."

Discussion

The patient, with no known preexisting urea cycle disorder, developed HAE associated with the 5-FU infusion as part of neoadjuvant therapy for his locally advanced gastric adenocarcinoma. In cancer patients presenting with altered mental status, initial testing should include measuring ammonia levels. Treating acute HAE should involve a systematic approach that includes reducing the nitrogen load, eliminating ammonia, and discontinuing the offending agent. Further screening for urea cycle disorders may be warranted. When resuming chemotherapy in patients with a history of chemotherapy-induced HAE, measures should be taken to minimize the risk of recurrence, with contributions from metabolic specialists, nutritionists, and geneticists.[1] The pathophysiology of this condition warrants further investigation, and the development of treatment guidelines would be immensely beneficial.

Bupivacaine Induced Sinus Pause and Atrioventricular Block: A Rare but Possible Complication

Heesung Moon, MD; Saeed Abughazaleh, MD, Michael Orlov, M.D., PhD, FACC; SEMC

Introduction

Local anesthetics pose a theoretical risk of cardiotoxicity involving the electrical and/ or mechanical structures of the heart. Of all amide anesthetics, bupivacaine is said to have the most cardiotoxic effect. However, instances of such cardiotoxicities have primarily been observed in animal studies, with only few anecdotal reports witnessing such occurrences in humans. Notably, there has been only one other case report involving concomitant sinus pauses and high degree atrioventricular (AV) block in patients undergoing bupivacaine treatment.

Case

This is a 35-year-old female patient with no significant past medical history admitted for a prophylactic cervical cerclage at 14 weeks of pregnancy. Patient had undergone an uneventful cervical cerclage with spinal anesthesia with bupivacaine (total of 11mg, 0.5%, 30ml). Following her recovery in the post anesthesia care unit (PACU) after an hour post-procedure, patient had an episode of syncope. Telemetry monitoring revealed severe bradycardia with sinus pause lasting up to 15 seconds (Fig 1-A), followed by a subsequent high-grade AV block (Fig 1-B) 30 minutes later with her heart rate in the 20s associated with nausea and near-syncope. The patient reported no prior episodes of syncope or pre-syncope and denied any personal or family history of cardiac disease. Patient was monitored for 4 hours with no further episodes of bradycardia or syncope. 12 lead EKG showed normal sinus rhythm at 77 bpm, PR interval of 176, QRS duration of 96, QTc interval of 421. Routine laboratory tests were unremarkable with no electrolyte abnormalities. She was discharged with Holter monitoring for 2 weeks.

Discussion

The sinus pause and AV block after spinal anesthesia in this young, healthy patient were most likely induced by bupivacaine toxicity. While vasovagal syncope was part of the differential, absence of prior similar episodes during procedures and absence of clear precipitants made it less likely the cause. Theoretically, off target cardiac sodium channel blockage is thought to be the cause of this cardiotoxicity with possible involvement of calcium channels. However, these hypotheses were based on in vitro studies and primarily demonstrated in animal models with very few clinical case reports. Current treatment in cases of this cardiotoxicity is limited to cessation of the anesthetic, cardiopulmonary support, and intravenous lipid emulsion therapy. Bupivacaine induced sinus pause and AV block is an exceptionally rare but possible complication. This case underscores the importance of recognizing potential adverse effects of local anesthetics, conducting a thorough differential diagnosis based on patient history and presentation, and promptly addressing such complications. This is only the second reported case to date, emphasizing the necessity for further investigation and research to understand the specific mechanisms underlying this toxicity.

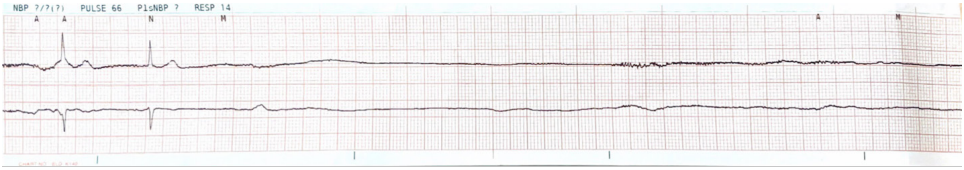


Fig 1-A. Sinus pause of 15 second duration (only the first few seconds of the pause below)

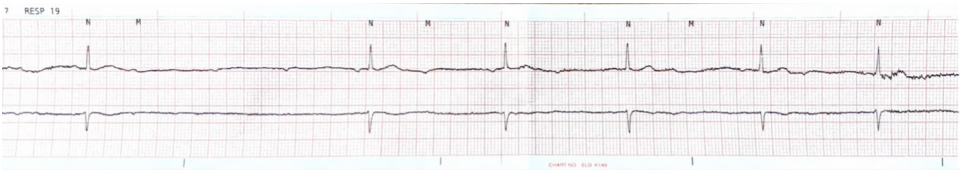


Fig 1-B. Transient high degree AV block

A case of rapidly progressive interstitial pulmonary fibrosis complicated by pneumothorax and pneumomediastinum.

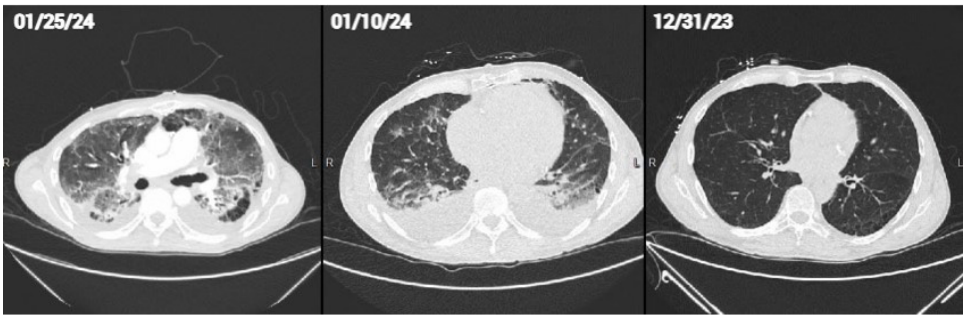
Bilawal Nadeem, Avinaash Raja Sager

Introduction

The Idiopathic Pulmonary Fibrosis network (IPFnet) defines an acute exacerbation of IPF (AE-IPF) as an acute worsening/flare of known IPF and the diagnosis of AE-IPF can be made with CT evidence of new bilateral ground glass opacities in the background of usual interstitial pneumonia (UIP) while UIP is characterized by subpleural and bibasilar reticulations that may progress to anatomical changes like traction bronchiectasis and honeycombing. Symptoms of AE-IPF should not be fully explainable by volume overload1-2. Severe 'flares' tend to portend very poor prognosis3. Here, we present a case of rapidly progressive ILD in setting of previously undiagnosed IPF.

Case Report

64-year-old male former smoker presented with NSTEMI, underwent CABG, he was recovering well, and undergoing spot diuresis for volume optimization. He developed atrial flutter and started on amiodarone. Around eight days later, he developed worsening acute hypoxic respiratory failure, eventually requiring positive pressure ventilation. Chest CT showed patchy, diffuse ground glass opacities in both lungs with bilateral, moderate pleural effusions. His symptoms were initially attributed to aspiration pneumonia and volume overload. The patient started on antibiotics and underwent aggressive diuresis. Infectious workup was unrevealing. Repeat chest CT was significant for new, extensive subpleural fibrosis, traction bronchiectasis, reticulations and mild honeycombing. Upon revisiting his prior CT scans, evidence of mild fibrosis was noticed, which raised the concern for interstitial lung disease flare. Amiodarone was discontinued and high dose steroids were started. An extensive autoimmune, rheumatologic and vasculitis workup was unremarkable. Repeat imaging showed new bilateral apical pneumothraces, extensive pneumomediastinum and subcutaneous emphysema over the chest. Esophageal rupture was ruled out. A right heart catheterization at this time revealed normal wedge pressures. The patient developed shock and acute encephalopathy. He was intubated for airway protection and treated with broad spectrum antibiotics for the concern of mediastinitis. However, his shock continued to deteriorate very rapidly, and he progressed into multi-organ failure. He transitioned to comfort care, deceased soon after.



Discussion:

Our patient had prior radiographic evidence of UIP, it is likely that he had IPF that went undiagnosed. However, definitive diagnosis is difficult because high resolution CT (HRCT), which is needed to define the specific UIP pattern, was not done in this case given the patients acuity1. Amiodarone induced toxicity is less likely because this is typically associated with an insidious course and cumulative exposure4. Risk factors for AE-IPF were recent thoracic surgery and probable aspiration given his history of severe reflux disease5-6. Our patient developed two known complications of IPF, namely pneumothorax and group 3 pulmonary hypertension, the latter being evidenced by depressed right ventricular function on echocardiography7. The mainstay of treatment in AE-IPF is glucocorticoids, antibiotics are often also used1. Prognosis is guarded and mortality during an AE is high3. Early recognition of IPF can help reduce subsequent AE's if patients are initiated on antifibrotic drugs8. During an AE-IPF, integration of palliative care early in the medical course is warranted1.

Spinal cord infarct in the setting of baroreceptor failure syndrome following neck irradiation – a case report

Angela Achkar, MD, Elie Naous, MD, Vaidyanathapuram Balakrishnan, MD, Andrew Moraco, MD

Introduction

The hallmark of baroreceptor failure syndrome manifests as extreme blood pressure variability, characterized by dramatic surges, hypotensive episodes, and orthostatic hypotension. Furthermore, it is well-established that hypoperfusion serves as one of the contributing factors to stroke in individuals with underlying atherosclerosis.

Case description

This is the case of a 76-year-old male with a past medical history significant for longstanding essential hypertension on carvedilol 12.5 mg twice daily, losartan 25 mg daily, and hydrochlorothiazide 12.5 mg daily, hyperlipidemia on atorvastatin 80 mg daily, hypothyroidism on levothyroxine, and a remote history of thyroid cancer treated with radical neck dissection and radiotherapy. He presented with weakness, unsteadiness, and generalized fatigue preceded by acute onset neck stiffness with pain and spasms. Upon examination, he was found to have labile blood pressure ranging from a systolic as high as 220 mm Hg to as low as in the 50s. Orthostatic blood pressure measurements demonstrated a notable drop from 203/131 mm Hg in the supine position to 75/49 mm Hg upon standing, without reflex tachycardia. On physical exam, he was found to have left pinprick loss sensation, right upper extremity mild weakness, and bilateral lower extremity rhythmic buckling upon standing. The rest of his physical exam was unremarkable. Laboratory profile was noncontributory. Diagnostic imaging, including brain MRI, MRA, neck MRI, and MRA, revealed an acute/subacute infarct on the right side of the C3 cord, occlusion of the left cervical vertebral artery, irregularity at the right carotid bulb, and narrowing at the left carotid bulb. Treatment involved the administration of midodrine in the morning and mid to late afternoon and adjustments of the patient's antihypertensive medications at bedtime, resulting in a satisfactory response.

Discussion

We suggest that labile hypertension and orthostatic intolerance can emerge as late sequelae of neck irradiation. It is attributable to chronic baroreflex failure which remains often under-recognized. This is further supported by the lack of tachycardia in response to blood pressure variations during orthostasis. Restricting the mobility of carotid sinus mechanoreceptors within stiffened arterial walls would hinder the ability to sense changes in blood pressure. This may result in a disruption in the baroreflex control of cardiovagal and sympathetic outflows. For our patient, the development of atherosclerosis can be explained by his cardiovascular risk factors and history of neck irradiation. Profound orthostatic hypotension in the setting of atherosclerotic vasculature is a plausible explanation for his hypoperfusion-induced spinal infarct.

Sinusitis with a History of Maxillofacial Trauma: To image or not to Image?

Rohan Wijewickrama MD, Renu Paneru MD, Hasan Alarawi MD

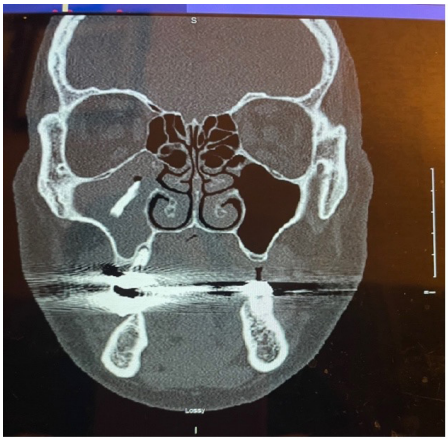


Figure 1. A coronal tomographic computed scan of maxillofacial area demonstration foreign body in right maxillary sinus

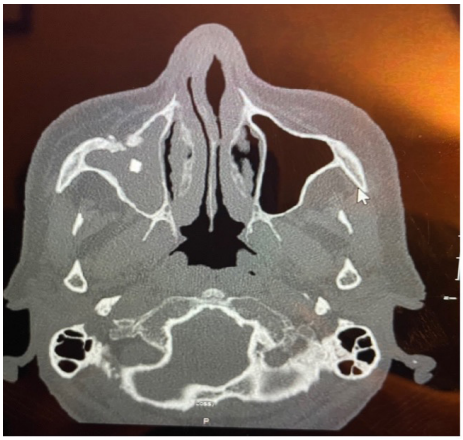


Figure 2. An axial tomographic computed scan of maxillofacial area showing foreign body in maxillary sinus and recovered fracturesdemonstrating maxillary sinus foreign body and recovered fracturedmaxillofacial area demonstrating right maxillary sinus foreign body.

Abstract

Foreign bodies in the paranasal sinuses are extremely rare and mostly of traumatic in origin. Approximately 70 % of these foreign bodies are associated with some form of maxillofacial trauma.1 More than 50 % of the foreign bodies in the paranasal sinuses are found in the maxillary sinus.2 We present case of a 56-year-old patient with late complications associated with glass pieces in right maxillary sinus and anterior mid face. Combined surgical approach through a endoscopic sinus surgery and sublabial approach was successful to remove all pieces of the glass. Patients presenting with maxillo-facial injuries, especially those with lacerations due to glass should have thorough examination and appropriate imaging after the injury.

Keywords- foreign body; glass; maxillary sinus

Case presentation

A 56-year-old male presented to ED reporting an ongoing frontal headache, right cheek tenderness as well as malodorous smell in his nares over the 2 weeks. He states a syncopal episode resulting in unwitnessed fall 6 months ago where he was walking down the hall in his house carrying a cup of tea, and then woke up on the floor with a broken teacup and lacerated lip. He did not notice any symptoms for a period of six months.

Physical examination on presentation to our institution revealed multiple right cheek chronic scars, swelling and tenderness. On examination with a nasal speculum, in addition to mucosal

hyperemia, there was a deviated septum to the right side without purulent secretions. No visible foreign body seen in the gum or hard palate. Eye movements were normal in all directions. Other systemic examination findings were normal.

The patient then underwent Axial and coronal computed tomography (CT). Axial CT revealed an approximately 2.5 cm long x 0.5 cm wide residual foreign body in the right maxillary sinus due to penetrating injury. A gap in the bone where the anterior wall was also pushed in. There were other fragments seen peripheral to the anterior wall of the right maxillary sinus. The right maxillary sinus was opacified and the orbits were intact.

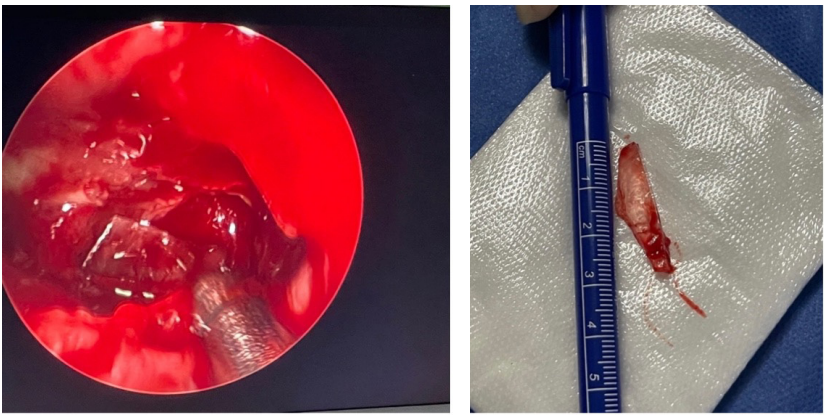


Figure 3. A glass foreign body in the maxillary sinus was seen on endoscopic maxillary antrostomy

The patient underwent elective Right endoscopic sinus surgery, septoplasty and sublabial approach for retrieval of foreign bodies. Under 30-degree endoscopy, there was evidence of inflamed tissue within the right maxillary sinus, in addition there was evidence of purulent drainage, which was swabbed for culture assessment. There was evidence of a 3 cm glass foreign body in the maxillary antrum and carefully rotated using a frontal seeker and then grasped with a curved Skinner forceps, which was used to retrieve the foreign body into the nasal cavity requiring additional time. Meticulous rotation was done to prevent penetration of the right orbit or fracture of the glass. The foreign body was carefully retrieved from the right maxillary sinus cavity and grasped with pituitary forceps to retrieve it from the nasal cavity .Further evaluation of the right maxillary sinus with 30 and 45-degree nasal endoscopy demonstrated no evidence of further foreign body mass or lesion. A bovie was then used to incise the gingiva down to the level of the anterior maxilla. There was evidence of palpable irregularities in the medial aspect of the soft tissue. After tedious dissection, there were evidence of multiple fragments of glass in the region which were removed. Some of the glass was imbedded in the surrounding soft tissue, which was further resected from the region.

Discussion

Foreign bodies in the paranasal sinuses are uncommon. The foreign bodies in the paranasal sinus are often asymptomatic, but some can cause variable symptoms. If not suspected, they

may escape detection during initial examination.3 Fifty percent of such foreign bodies are dislodged in maxillary sinus. Glass and metal fragments are the commonest forms of foreign bodies seen within the paranasal sinuses.4 The type, timing, and intensity of an inflammatory reaction within paranasal sinuses are determined primarily by the chemical composition and physical form of the foreign object. Material that is inert—such as glass, metal, or plastic- elicit less inflammation and fibrosis as compared to vegetative foreign bodies like wood, stones or thorns. Although glass is inert material, it can cause recurrent infection and obstruction of sinus ostium. In this case, patient presented with sinus pressure, headache and parosmia after 6 months and foreign body was incidentally detected on imaging of sinuses.

Most of the time foreign bodies in paranasal sinuses are asymptomatic, if they are inert such as glass, metals. But if they are retained over long time , they tend to cause mild but chronic inflammation inside sinuses. Retained foreign bodies may lead to severe intractable headaches over period of time. The patient in this case had severe headache and mid face pain which was intolerable and had little relief with analgesics. Hence, retained foreign body require removal. Additionally, size and location of foreign body is important in the development of symptoms, and is significant factor for making decision for its removal.

In all cases of maxillofacial traumas, all lacerations should not only be cleaned and sutures, but they should be thoroughly inspected for possible foreign bodies. After the initial examination, convention facial CT imaging should be acquired because they provide important information regarding maxillofacial fractures and foreign bodies.

Conclusion

In case of maxillofacial trauma, suspicion of a foreign body entry should always be maintained. A careful examination of the wound and appropriate imaging may help to avoid future complications. Type, size and location of foreign bodies plays important role in development of symptoms, and is a factor for making removal decision.

Saddle Pulmonary Embolism and Thrombocytopenia: Challenges in Management Post-Cardiac Arrest and the Need for Further Research

M.Talha Ugurlu[1], Ateeb Parvez[1], Marina Khan[1], Ibrahim Elkhawas[1], Emeka Agudile[1], Zeeshan Solangi[1], Kamran Manzoor[1,2]

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[2]Department of Pulmonary and Critical Care Medicine, South Shore Medical Center, Norwell, MA

Introduction

Management of saddle pulmonary embolism (PE) with hemodynamic instability can be challenging with contraindications of systemic lysis. We report a case of saddle PE that required suction thrombectomy given poor response to tPA.

Case Presentation

A 60-year-old female with rheumatoid arthritis (RA) on methotrexate, was admitted with fever and oral mucositis. Lab workup showed leukopenia, normocytic anemia at 12 g/dl, and thrombocytopenia at 73. She developed hypotension, followed by vomiting that led to hypoxia and then PEA. Also, it is noted to have blood in the oral cavity and airway. After 6 minutes of CPR, ROSC was achieved. She remained unresponsive to painful stimuli. CT head ruled out intracranial bleeding. CTA showed saddle PE with extensive bilateral clot burden and right heart strain. Echo revealed moderate RV dysfunction but significantly worsened upon ICU arrival with worsening vasopressor requirements. Given her worsening RV failure, she needed immediate intervention with thrombolytics; however, due to thrombocytopenia and airway bleeding, and recent CPR, a half-dose of tPA was given, along with 2 units of platelets. Post tPA, INR was 2.8, aPTT was 150 and fibrinogen level was 132. With ongoing RV dysfunction and worsening shock, the decision was made to proceed with suction thrombectomy which extracted fresh but mostly organized clots from both pulmonary arteries. Post thrombectomy PA pressure was 34/24 mmHg (Mean 29 mmHg). Although hemodynamics improved, she developed lower GI bleeding requiring 2 PRBC transfusions. Neuroimaging revealed new watershed infarcts. Despite resuscitation, thrombolytic therapy, and thrombectomy, the patient experienced an unfavorable outcome with neurological deterioration, requiring tracheostomy and PEG tube, which were removed after 6-weeks.

Discussion

Managing saddle PE in high-risk patients can be challenging after cardiac arrest, particularly with relative contraindications for systemic lysis including thrombocytopenia and bleeding. In our case, we cautiously used a 50% dose of tPA resulting in adequate systemic thrombolysis without clinical improvement. We highlighted the expected response to systemic lysis but also emphasized that If there is no adequate hemodynamic improvement, consideration of alternative interventions including suction thrombectomy or surgical pulmonary embolectomy becomes crucial.

Hypokalemia-Induced Nephrogenic Diabetes Insipidus in an Adult with Severe Hyponatremia: A Case Report

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[2]Tufts University School of Medicine, Boston, MA, United States.

Introduction

Acquired nephrogenic diabetes insipidus (DI) can be due to kidney disease, medication adverse effects, or electrolyte derangements, such as hypokalemia. We report a case of acquired nephrogenic DI due to hypokalemia in the setting of severe hyponatremia.

Case Description:

A 54-year-old man with hypertension and bipolar disorder on lithium therapy presented with nausea, vomiting, and fatigue for several days. Initial laboratory work showed metabolic alkalosis with venous blood pH of 7.61, serum bicarbonate of 41 mmol/L, serum sodium of 102 mmol/L, serum potassium of 2.0 mmol/L, and serum chloride of 60 mmol/L. Urinalysis showed low osmolality of 60 mOsm/kg and sodium of

<20 mmol/L. The hyponatremia was attributed to a combination of psychogenic polydipsia and decreased solute intake and was treated with fluid restriction. Subsequent hyponatremia overcorrection (>12mmol/L per day) with a continued urine output of 7-8 L/day was managed with dextrose 5% in water and desmopressin.

Interestingly, urine osmolality remained at 63 mOsm/kg and did not increase after several doses of desmopressin, consistent with the diagnosis of nephrogenic DI, initially attributed to lithium use. However, after normalization of serum potassium, spontaneous urine concentration to 360 mOsm/kg was observed (Figure 1), suggesting hypokalemia-induced nephrogenic DI.

Discussion:

This case illustrates the critical role that potassium plays in the urine concentrating ability of the kidney. Adequate serum potassium levels are necessary for the kidneys to respond to desmopressin, which is an essential tool in treating hyponatremia overcorrection. Rapid potassium repletion is often initially delayed to avoid hyponatremia overcorrection and its dramatic complications. However, hypokalemia can lead to acquired nephrogenic DI which can worsen hyponatremia overcorrection.

Breathless Beats: Unmasking Acute Amiodarone Induced Pneumonitis

William Laband MD, Adhiraj Bhattacharya MD, Alena Goldman MD

Background

A 57-year-old male presented with substernal chest pain, progressive dyspnea, and palpitations and was diagnosed with atrial fibrillation (AF) with a rapid ventricular response.

Case

The patient had a background of hypertension, hyperlipidemia, COPD, OSA, and HOCM, for which he had received septal ablation 18 years previously. Despite multiple attempts with rate control medications, three direct current cardioversions (DCCV), and radiofrequency ablations of the pulmonary veins (PVI), posterior wall cavotricuspid isthmus (CTI), and superior vena cava (SVC) isolation, his AF remained poorly controlled and symptomatic. He was initiated on amiodarone (9.2g load), but four days later, developed acute pneumonitis, as evidenced by bilateral ground glass changes on CT scan and a new need for oxygen supplementation. The decision was made to treat him with methylprednisolone. Ultimately, his AF was managed with atrioventricular node (AVN) ablation and permanent pacemaker insertion. He was discharged with a 12-week tapering course of prednisone. Follow up imaging demonstrated a resolution of ground glass opacifications.

Decision making

The patient experienced severe symptoms related to his arrhythmia and was intolerant of rate control medications due to hypotension. Amiodarone was utilized in an effort to restore and retain sinus rhythm. The diagnosis of amiodarone induced pulmonary toxicity was reached after excluding alternative diagnoses.

Conclusion

Pulmonary toxicity is a well-recognized and one of the most serious adverse events associated with amiodarone use, affecting up to 5% of patients, typically with chronic use and high cumulative doses (400mg daily for 2-3 months). Acute amiodarone-induced pulmonary toxicity (AIPT) is exceptionally rare but can be highly aggressive, carrying a mortality rate of up to 50%. Acute AIPT typically presents in postoperative surgical patients, with very few cases documented in medical literature.

Beyond the Obvious: Unveiling Chilaiditi Syndrome - A Case Report and Management Implications

Yusuf Yalcin, Ibrahim Kamel, Reid Ponder, Ibrahim Elkhawas, Zeeshan Solangi

Carney Hospital

Introduction:

Chilaiditi syndrome, characterized by the radiologic finding of Chilaiditi sign along with clinical symptoms like respiratory insufficiency or bowel obstruction, presents diagnostic and management challenges. We present a case study of a 70-year-old male with a history of depression, anxiety, GERD, and post-polio syndrome, who exhibited symptoms suggestive of Chilaiditi syndrome. This case discusses the complexities involved in diagnosing and managing this condition, particularly in patients with chronic comorbidities.

Description of the Case:

A 70-year-old male presented to our emergency department with left shoulder pain, chronic weakness, and dizziness. Initial evaluation revealed hypotension (87/61 mmHg) and elevated lactic acid (4.6 mmol/L), attributed to dehydration. Further imaging identified Chilaiditi sign, raising suspicion for small-bowel obstruction and Chilaiditi syndrome. Despite conservative management, including hydration and bowel rest, the patient's lactic acid levels remained elevated. Subsequent imaging ruled out acute intra-abdominal pathology, and the patient improved with continued conservative measures.

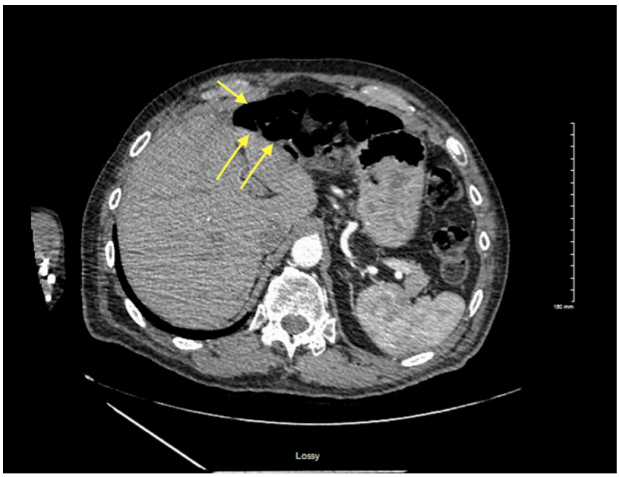
Discussion:

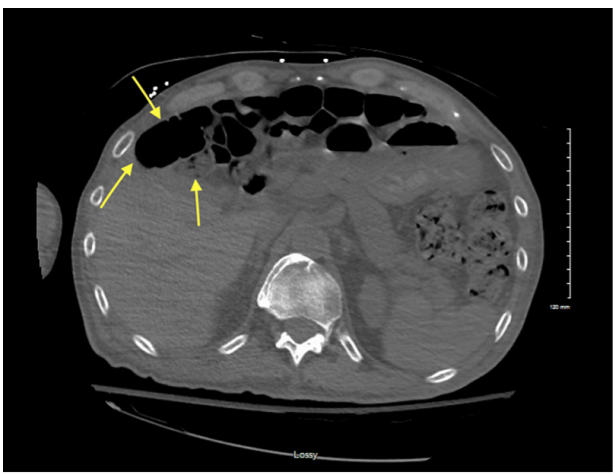
This case highlights the importance of integrating radiologic findings with clinical status in diagnosing Chilaiditi syndrome. Given the broad differentials associated with subdiaphragmatic air, careful consideration is needed to avoid unnecessary surgical interventions, especially in elderly patients with multiple comorbidities. In our case, the patient's frailty and chronic conditions influenced the decision for conservative management, leading to successful symptom resolution without surgical intervention.

The prevalence of Chilaiditi sign is highest in the elderly, possibly due to factors such as intestinal hypermobility and colonic redundancy associated with aging. Differential diagnosis should consider imaging techniques that distinguish Chilaiditi sign from other emergent conditions. Imaging features such as haustral markings surrounding subdiaphragmatic air and lack of positional change are crucial in making an accurate diagnosis.

Treatment strategies for Chilaiditi syndrome vary based on symptom severity and recurrence. Conservative management may suffice for mild cases, while severe cases may require surgical intervention such as colonic resection combined with hepatopexy. Understanding the diverse presentations and management options is essential for optimizing outcomes, particularly in elderly patients with multiple comorbidities.

In conclusion, Chilaiditi syndrome presents diagnostic and management challenges, especially in patients with chronic comorbidities. Tailored treatment strategies guided by symptom severity and recurrence are essential for achieving favorable outcomes. Further research and standardized protocols may help improve the understanding and management of this rare condition.





Aneurysmal Bone Cyst (ABC) of Calcaneus: A Case Presentation of a Rare Bone Neoplasm with Two Year Follow-Up & Outcome.

Eric Marchetti DPM, Brandon Kelemen DPM, David Caldarella DPM FACFAS

Abstract

Introduction: An Aneurysmal Bone Cyst (ABC) is a rare, locally aggressive, destructive, hemorrhagic, osteoclastic giant cell rich expansile bone lesion now recognized to be a true neoplasm accounting for just one percent (1%) of all bone tumors. The reported incidence of ABC's are 0.14 per 100,000 iindividuals. The reported prevalence of ABC's 0.32 cases per 100,000 individuals. ABC's present symptomatically, most commonly in pediatric and young adult populations with a slight male to female ratio of 1:1.16. The primary differential diagnosis of ABC includes chondroblastoma, fibrous dysplasia, giant cell tumor, osteoblastoma, and telangiectatic osteosarcoma.

Purpose

We provide this unique case presentation to illustrate the stepwise approach in appropriate evaluation, radiographic assessment, histological confirmation of diagnosis, and surgical treatment towards the effective management of a rare aneurysmal bone cyst of the calcaneus.

Materials & Methods

A 25-year-old male presented upon referral to our service with a history of insidious onset of swelling and pain involving the lateral ankle and hindfoot limiting ambulation, shoewear fit and athletic activities. Initial plain radiographs and advanced imaging via MR revealed an expansile lytic lesion involving a majority of the calcaneal tuber with "fluid-fluid" levels. CT was also performed which confirmed suspicion of subtle, yet impending incomplete pathologic fracture with near compromise of the posterior facet of the subtalar joint. Initial biopsy was performed, and adequate tissue sample procured. A comprehensive histologic and cytogenetic analysis confirmed ABC. Subsequent definitive treatment included standard aggressive debridement and curettage of the bone neoplasm with tricalcium phosphate bone cement grafting.

Results

Patient underwent initial biopsy, and subsequent definitive surgical treatment and has been followed in serial clinical and radiographic evaluation over a two-year (24 month) follow-up period. Patient has enjoyed a full recovery with no recurrence and has returned successfully to his normal activity of daily living and physical fitness activities.

Discussion

This well illustrated case study offers the stepwise evaluation and management of a rare aneurysmal bone cyst involving the calcaneus detailing an appropriate approach to the treatment of these rare lesions. Conclusion: ABC is a rare bone tumor, now recognized as a true neoplasm. Appropriate clinical examination, radiographic assessment, biopsy procurement, histological assessment and definitive surgical treatment are presented. This case study demonstrates a satisfactory outcome with serial and radiographic follow-up over a 24 month timeline.

Acute inflammatory Demyelinating Polyneuropathy Leading To Quadriplegia Mediated By H. Influenzae

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Introduction

Acute inflammatory demyelinating polyneuropathy (AIDP) is the most common form of GBS characterised by autoimmune mimicry of Schwann cells and myelin leading to sensory-motor deficit, areflexia, ascending paralysis and albuminocytological dissociation. Here, we present a case of a patient with a severe AIDP that emerged after a H influenzae infection.

Case Presentation

A 32 years old Caucasian female with a history of anxiety disorder, obesity, was admitted with cough and left lower lobe infiltrate on CXR. Concurrent asymmetrical progressive weakness, initially on left side, followed by right side but led to quadriplegia in 24 hours. She was afebrile with stable vital signs. Workup including CT head was negative; MRI of the brain and C-spine with no diffusion restriction changes. She had flaccid paralysis and areflexia and subsequently noticed to have progressive dyspnea with respiratory failure (NIF-20 cm H2O) requiring intubation. Lumbar puncture revealed elevated protein of 52 g with normal WBC count. Given high suspicion of AIDP, she was initiated on IVIG. EMG showed severe sensorimotor polyneuropathy involving all extremities without any obvious demyelination component. Sputum culture was positive for H influenzae and treated with ceftriaxone. Multiple serological testing including workup for myasthenia gravis and vasculitis was negative. Clinically, she continues to have a subsequent improvement in muscular weakness but could not be weaned requiring a tracheostomy. The patient was discharged to long-term acute care for subsequent recovery and ventilator weaning.

Discussion

AIDP is an autoimmune disease with the production of autoantibodies through molecular mimicry causing demyelination of peripheral nerves. The progressive course of the disease may require intubation in 20% of cases with partial or complete recovery. Different infections including H.influenzae, C.jejuni, M.pneumoniae, CMV, Influenza A/B, HIV, and COVID -19 virus could cause such syndrome. In some cases, the manifestation of neurological symptoms could be delayed up to 90 days preceding URI symptoms to establish the diagnosis of GBS. An early CSF analysis, and nerve conduction test should be considered in clinical cases with high clinical suspicion but should not delay treatment.

Generalized Seizure after Spontaneous Micro-Rupture of Giant Dermoid Cyst of the Sylvian Fissure

Marina Khan MD[1], Charles E. Mackel, MD/JD[2], Emanuela Binello, MD/PhD[3]

[1]Steward Carney Hospital, Department of Neurosurgery, [2]Beth Israel Deaconess Medical Center, [3]Lowry Medical Office Building, 110 Francis St 3B, Boston MA.

Case

A 57-year-old male presented through the emergency department after a generalized seizure. Once recovered, he was otherwise asymptomatic with a nonfocal neurologic exam. Noncontrast head computed tomography scan (CT) revealed a massive, bilobed, hypodense mass in the right frontotemporal lobe with a discontinuous calcified rim and severely thinned overlying calvarium (Figure 1). Brain magnetic resonance imaging (MRI) delineated a well-circumscribed 8.0 x 5.5 x 6.7 cm lesion centered in the sylvian fissure that was heterogeneously T1- and T2-hyperintense without enhancement or edema (Figure 2). Scarce extralesional lipid droplets were seen on MRI and CT.

The patient underwent a craniotomy for resection. Beneath chronically inflamed dura mater, scattered across the cortical surface were minuscule white flecks consistent with rupture. After cyst capsulotomy, pungent, pultaceous contents were aspirated, and evolving dental structures extracted along with different colored hair follicles; irrigation fully evacuated the cyst contents. Capsular wall densely adhered to the supraclinoid internal carotid artery as well as middle and anterior cerebral arteries; thus, subtotal resection was elected to avoid vascular injury. The patient remained at his neurological baseline post-operatively. Histopathology demonstrated epithelial wall, keratotic hair, and skin elements, and diagnosis of dermoid cyst was made. Despite a complicated postoperative course from tongue trauma, the patient recovered well and at six months' follow-up had neither neurologic deficit nor seizure recurrence.

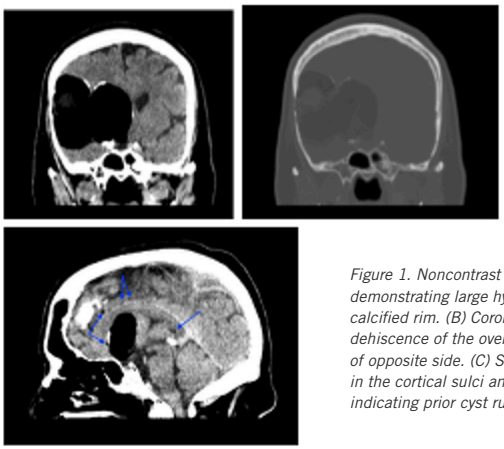

Figure 1. Noncontrast CT of the head. (A) Coronal imaging demonstrating large hypodense lesion with discontinuous calcified rim. (B) Coronal bone window demonstrating near dehiscence of the overlying calvarium. Compare bone thickness of opposite side. (C) Sagittal image with punctate fat droplets in the cortical sulci and subarachnoid space denoted by arrows indicating prior cyst rupture.

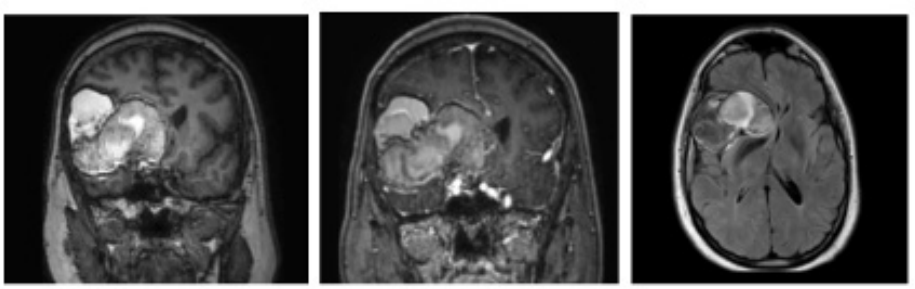

Figure 2. MRI of the brain. (A) Coronal T1-weighted imaging without contrast demonstrating a massive cyst 8.0 cm in oblique diameter with intrinsic T1-hyperintensity. (B) Same image after administration of gadolinium demonstrating relationship of the cyst to adjacent vasculature. Note early invasion of the lesion into the sella turcica. (C) Axial T2-FLAIR demonstrating intralesional heterogenous signal and 13mm of midline shift with effacement of the right frontal horn.

Discussion

Dermoid cysts are rare congenital tumors that constitute 0.04-0.6% of intracranial tumors.1 Frequently diagnosed in the 4th decade of life, they originate from ectoderm sequestered within the neural tube during gastrulation.1 As such, they contain epithelial and dermal elements that slowly enlarge the tumor through continuous turnover of epithelium, hair follicles, sebaceous glands, and sweat glands.1,2 These contents yield a characteristic image: a hypodense, avascular lesion on noncontrast head CT, intrinsically T1-bright with heterogenous T2-FLAIR signal on MRI.1 Typically, the intracranial dermoid cysts locate in the midline or posterior fossa.1,2 Lateralization to the sylvian fissure is extremely rare with the current case only the thirteenth recorded instance.2 Gradual growth coupled with an epicenter away from midline neural structures allowed this cyst's late diagnosis and to become one of the literature's largest in size.

Spontaneous rupture is an uncommon but feared event of intracranial dermoids that risks hydrocephalus, chemical meningitis, and seizure.3 Spillage of contents may be identified within the cortical sulci, subarachnoid cisterns, or ventricles as hypodense droplets on CT or T1-bright spots on MRI, or presumed by intense pial enhancement of chemical meningitis.1 Although our patient's preoperative images suggested few foci of rupture, diffuse spillage was evident intraoperatively. While acute rupture can be managed with steroids and antiepileptics and long-term medical management of ruptured cysts has been achieved, surgical resection represents definitive treatment.3 Unlike epidermoids, dermoid cyst recurrence after subtotal removal is highly unusual.3 As in this case, tumor capsule densely adherent to critical neurovascular structures should be left behind. Because radiation and chemotherapy offer no additional benefit, the patient should be followed for the exceptional event of cyst recurrence and/or development of hydrocephalus.

Diverse Reasons for Discontinuing Gender Affirming Hormone Therapy

Arpit Jain, MD, St. Elizabeth's Medical Center
Michael Scott Irwig, MD; Beth Israel Deaconess Medical Center, Boston

Introduction

Many Transgender and Gender Diverse (TGD) individuals take Gender Affirming Hormone Therapy (GAHT). A study that included 264 adults [67% assigned male at birth (AMAB)] in Georgia found that 2% (n=5) discontinued GAHT over a follow-up period of 64 months. Reasons identified were change in gender identity (n=2), financial barriers (n=2) and venous thrombosis (n=1). Discontinuation was temporary for 2 and permanent for 2. We describe the reasons why four TGD individuals discontinued GAHT.

Description of Case

Patient 1, AMAB, came out as gay as a teenager. In his mid 30s he became unhappy, which he attributed to a conflict between religion and his sexual orientation and failed relationships. He thought that changing his sex would solve his problems. He took injectable estrogen for 3-4 years. He subsequently underwent multiple gender-affirmation surgeries including facial feminization surgery, breast implants, an orchiectomy, and vaginoplasty. Immediately following the breast implant surgery, he had regrets and wanted them removed. He also regretted the vaginoplasty. He stopped estrogen following the bottom surgery. In his 40s he stated that he would like to detransition as he sees himself "as a fake" when looking in the mirror.

Patient 2 was assigned female at birth. Puberty was associated with discomfort from having a large chest. In his late 20s he began injectable testosterone which he took for three years. He then decided to take a two-year break as he was frustrated that he had not achieved the desired results and because he was still not able to pass as a man. He resumed testosterone two years ago and underwent top surgery.

Patient 3, AMAB, knew from a young age that he was transgender. He took estrogen and an antiandrogen for > 5 years and underwent an orchiectomy and vaginoplasty. He was pleased with the results from the GAHT and surgeries. He presented as a woman for many years. A few years ago, however, he awoke one day with the thought that God wanted him to be a man. He decided to detransition and presented to the endocrinology clinic to start testosterone therapy.

Patient 4, AMAB, began GAHT in her late 30s. She discontinued GAHT 4 years later due to lack of results (feminization, larger breasts, wider hips and a more curvy figure). She presented to the endocrinology clinic 2 years later, wanting to resume GAHT.

Discussion

In addition to the reasons identified by Gupta et al for discontinuation of GAHT, we also identified unrealistic expectations, not achieving the desired results and perceived conflict between religion and gender identity. Endocrinologists should be aware of the possibility of discontinuation of GAHT and know how to manage any potential complications such as hypogonadism that may arise.

Rapid Recovery from Cocaine-Induced Cardiomyopathy: A Case Report

Ibrahim Kamel, Amr Saleh, Sadaf Esteghamati, Harold Dietzius

Introduction

Cocaine abuse presents a myriad of health challenges, including cardiovascular complications such as cocaine-induced cardiomyopathy (CIC). This case study delves into the presentation, diagnosis, and management of a 33-year-old male admitted with altered mental status (AMS) and respiratory distress, ultimately diagnosed with CIC. The discussion encompasses the complexities of cocaine-related cardiovascular pathology and the challenges in diagnosis and management.

Description of Case

A 33-year-old male presented with shortness of breath and altered mental status. Physical examination revealed confusion, somnolence, wheezing, and crackles on bilateral lung bases. Urine toxicology screening tested positive for cocaine. Past medical history included asthma and substance abuse. Initial differentials included CIC, acute myocardial infarction (MI), aspiration pneumonia, and pulmonary embolism (PE).

Investigations revealed multifocal bilateral lung infiltrations on chest X-Ray, sinus tachycardia with ST segment elevations on ECG, elevated cardiac biomarkers, and lactic acidosis. Imaging studies showed patchy infiltrates and echocardiogram indicated severe left ventricular systolic dysfunction, with possible features of PE. Management included ICU admission, supportive care, and investigations for ischemic etiology. Despite initial challenges, the patient showed remarkable improvement with fluid therapy, diuretics, and cessation of cocaine.

Discussion

Cocaine abuse poses significant cardiovascular risks, including ischemia, myocarditis, arrhythmias, and cardiomyopathy. Acute usage induces vasoconstriction, thrombus formation, and increased myocardial oxygen demand, while chronic abuse accelerates atherogenesis and LV hypertrophy. Cocaine-induced cardiomyopathy's pathogenesis involves multifactorial mechanisms, including direct toxicity and chronic ischemia, often leading to heart failure symptoms.

Assessing heart failure in cocaine users necessitates a comprehensive evaluation, including history, physical examination, ECG, imaging, and biomarkers. Diagnosis may be challenging due to the lack of specific criteria and the variable clinical course. Treatment involves supportive measures, cessation of cocaine, and management of heart failure as per standard guidelines. Beta-blockers have shown efficacy in heart failure with concomitant cocaine use.

Cocaine-induced cardiomyopathy presents with a complex clinical spectrum and poses diagnostic and management challenges. This case underscores the importance of early recognition, comprehensive evaluation, and targeted therapy in mitigating the detrimental effects of cocaine abuse on cardiovascular health. Further research is imperative to elucidate the pathophysiology and optimize management strategies for this condition.

Generalized Seizure after Spontaneous Micro-Rupture of Giant Dermoid Cyst of the Sylvian Fissure

Marina Khan MD;1, Charles E. Mackel, MD/JD;2, Emanuela Binello, MD/PhD;3

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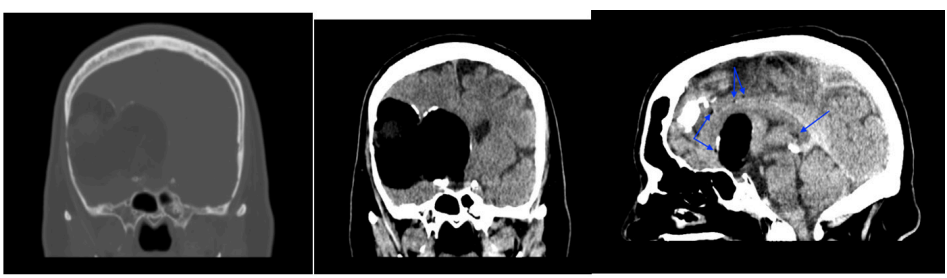

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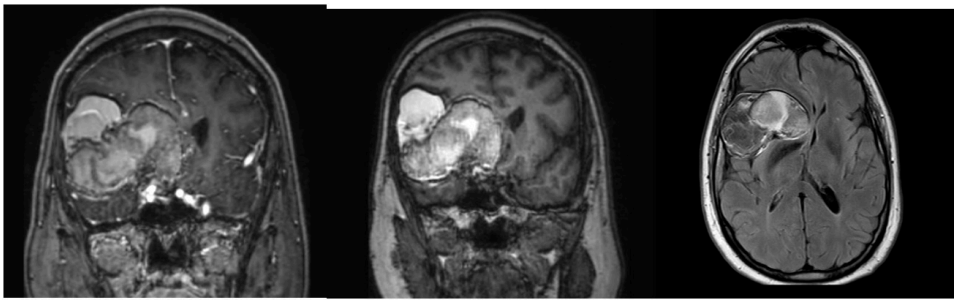

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Case of Rapidly Growing Tricuspid Valve Papillary Fibroelastoma Presenting with Syncope

Ibrahim Kamel MD, MHA[1], Harold Dietzius MD, FACC[2], Sadaf Esteghamati MD, MHA

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Introduction

Cardio-oncology represents a unique intersection of challenges in medical care, where cardiovascular diseases intersect with oncological conditions or their treatments. Here, we present a case of rapidly growing tricuspid valve papillary fibroelastoma (PFE) in a 60-year-old male, emphasizing the diagnostic approach, management strategies, and clinical implications.

Description of the Case:

A 60-year-old male experienced syncope at work, leading to a head injury. After regaining consciousness, he underwent a comprehensive workup to ascertain the cause of syncope. Imaging studies revealed no acute intracranial abnormalities on head CT scan, ruling out pulmonary embolism via chest CTA and indicating no carotid stenosis through carotid Doppler.

However, further investigation via TTE uncovered an unexpected finding—a mass on the tricuspid valve. Despite initial concerns about infective endocarditis, subsequent blood cultures returned negative, and no risk factors were identified.

Upon closer examination with a TEE, a 16 x 17 mm mobile echo density on the anterior leaflet of the tricuspid valve was revealed [figure 1]. This finding was confirmed by CMR, showing a mobile mass attached to the atrial side of the tricuspid valve measuring 15 x 11 mm [figure 2]. The mass did not uptake contrast with first-pass perfusion. There was a circumferential enhancement in post-contrast delayed imaging without central contrast uptake. These characteristics were indicative of a PFE. A review of medical records indicated a normal TTE five months prior to the event.

Discussion

PFEs are rare benign tumors that primarily involve the valvular endocardium, with a preference for the left-sided valves. They constitute 11.5% of all primary cardiac tumors, often presenting with embolic complications, especially in middle-aged individuals. PFE is recognized as a slow-growing tumor, with an estimated average growth rate of 0.5 ± 0.9 mm/year. Given the reported sensitivity and specificity of TTE for the detection of PFE ≥2 mm of 88.9 % and 87.8 %, respectively, it is unlikely that the PFE had been overlooked in the earlier study. This anomaly in location and the rapid growth observed presented a distinct clinical challenge.

In this instance, the rapid progression of the valvular mass underscored the urgency for intervention. The growth rate and location of the PFE necessitated surgical excision, as conservative management could lead to severe complications, including embolic events.

A Rare Case of Gastric Non-Hodgkin Lymphoma in a Helicobacter Pylori Infected Patient

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Introduction

Primary gastric diffuse large B-cell lymphoma (PG-DLBCL) is a rare gastric malignant neoplasm, but it is the most common subtype of extra-nodal non-Hodgkin's lymphoma (EN-NHL), accounting for 40 %–70 % of all primary gastric non-Hodgkin's lymphomas. While the association between H. pylori infection and gastric MALT lymphoma is well-established, data supporting its association with DLBCL is less robust. In recent years, scientists have shown that 35% of PG-DLBCL patients are affected with H. pylori, but there was a higher proportion of H. pylori infection in PG-DLBCL with low-grade MALT components. Here we present a rare case of PG-DLBCL diagnosed with H. pylori that was successfully managed with H. pylori eradication (HPE) and R-mini-CHOP chemotherapy.

Description of Case

An 82-year-old man presented to clinic with complaints of worsening heartburn and epigastric pain. He underwent an upper endoscopy (EGD) which revealed one large nonbleeding gastric ulcer (>7cm) in the posterior wall of the gastric body with heaped up margins (Figure 1A). Histopathological and immunohistochemical analysis confirmed PG-DLBCL (Figure 1B). H. Pylori stain was positive. Positron emission tomography (PET) scan revealed multiple FDG avid supra and infra-diaphragmatic lymph nodes with focal FDG uptake in the distal stomach consistent with biopsy-proven site of lymphoma, establishing a diagnosis of stage III/IV DLBCL with gastric Involvement with an IPI score of 2 and 5-year estimated overall survival of 51%. Patient was started on HPE and subsequently completed 6 cycles of R-mini-CHOP chemotherapy. Remission was confirmed by a follow-up EGD, which showed complete healing of the previously noted large ulcer and normal gastric mucosa upon examination using NBI mode (Figure 2A,B). Furthermore, multiple biopsies were obtained from the antrum and body of the stomach using a cold forceps for histological analysis. The results indicated no abnormalities, and immunohistochemical staining was negative for H. pylori. Moreover, patient had a follow-up PET scan which revealed no foci of metabolic activity. A CTAP with contrast conducted during a one-year follow-up was normal with no supra or infra-diaphragmatic lymphadenopathy. Since then, the patient has maintained remission for more than a year without recurrence.

Discussion

PG-DLBCL is an aggressive NHL that usually presents late and has an estimated survival of months without treatment. H. pylori infection leading to DLBCL without MALT lymphoma features has not been well established. In this scenario, nonetheless, it appears that HPE without chemotherapy is not an effective approach, as opposed to cases of H. pylori driven MALT lymphoma. Thus, the standard of care for patients with concomitant advanced PG-DLBCL and H. pylori infection would be combination of HPE and chemotherapy as in our patient. More research is needed to better understand the association between H. pylori and DLBCL in terms of causation, prognosis, as well as therapeutic implications.

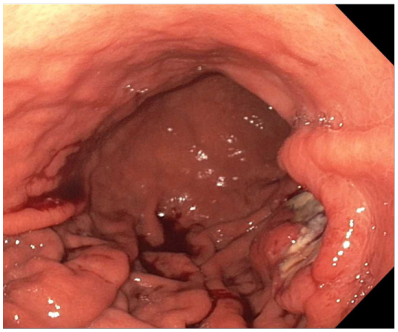

Figure 1A: EGD revealed one large non-bleeding gastric ulcer (>7cm) in the posterior wall of the gastric body with heaped up margins

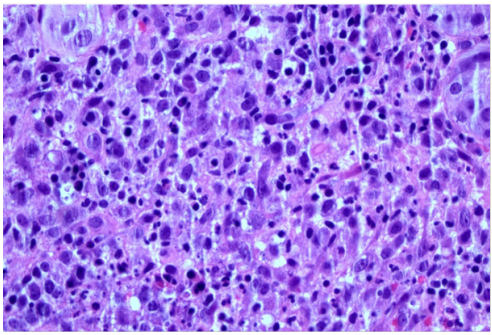

Figure 1B: Gastric mucosa with diffuse infiltration by intermediate to large lymphoid cells (H&E, original magnification 200X)

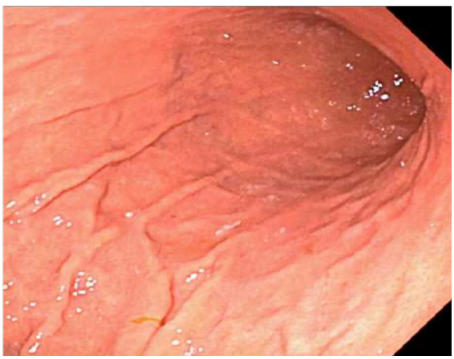

Figure 2A: EGD revealed complete healing of the previously noted large ulcer

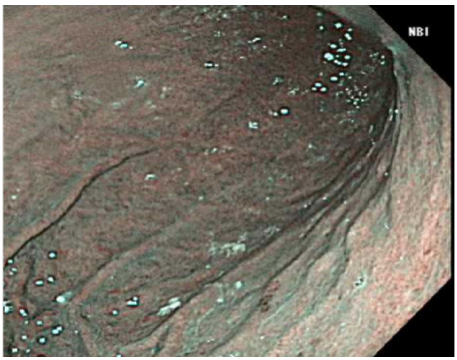

Figure 2B: Narrow-band imaging revealed normal gastric mucosa

Crossing Boundaries: Navigating the Diagnostic Labyrinth of Hepatic and Pulmonary Actinomycosis Post-COVID

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Introduction

Actinomycosis presents significant diagnostic challenges due to its varied clinical manifestations, rarity, and slow progression. This bacterial infection, caused by Actinomyces spp., notably Actinomyces israelii, has the unique ability to penetrate mucosal barriers, promoting spread through anatomical planes and potentially mimicking malignancies. Although cervicofacial involvement is most common, actinomycosis can also present in the thorax and abdomen, with the hepatic actinomycosis being exceptionally rare.

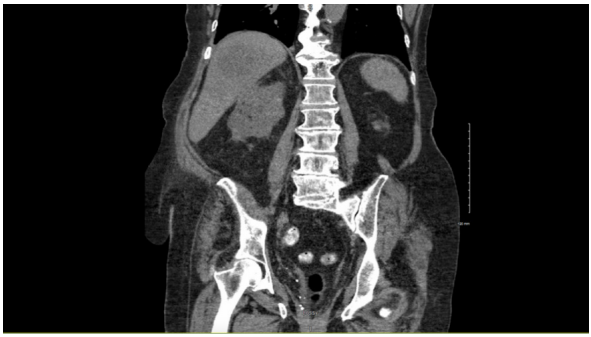
Description of the Case

We report a unique case of an 85-year-old female with a history of chronic kidney disease, diabetes, and hypertension, who presented with fevers, myalgias, and abdominal pain a few weeks after recovering from a COVID-19 infection. Workup was notable for a liver abscess, extending to the right perinephric space and a small pleural effusion [Figure 1]. Aspirate material from the abscess showed gram-positive filamentous rods on gram stain with a branching appearance [Figure 2] that yielded negative results on modified AFB stain. After six days of incubation, bacterial colonies emerged on the anaerobic plates, eventually confirmed as Actinomyces odontolyticus, diverging from the more commonly implicated A. israelii. Blood cultures remained negative. Transthoracic echocardiogram showed no valvulopathy or vegetations. The hospital course was complicated by acute hypoxic respiratory failure with CT evidence of an expanded, loculated right-sided pleural effusion. The patient's treatment combined prolonged antibiotic therapy with ampicillin/sulbactam and interventional radiology procedures for abscess drainage, reflecting the complexities of managing this rare infection. The patient was also considered for video-assisted thoracoscopic surgery for her refractory loculated pleural effusion but was deemed a poor surgical candidate. She was eventually discharged on a prolonged antibiotic regimen.

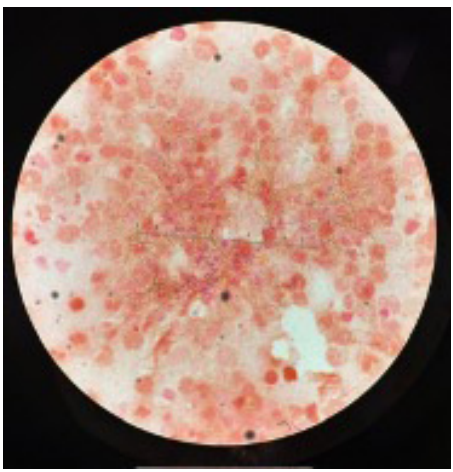
Discussion

This case underscores the diagnostic and therapeutic challenges posed by hepatic actinomycosis, especially when involving contiguous structures such as the diaphragm and lung, as such simultaneous occurrence is extraordinarily rare. The identification of A. odontolyticus, typically found in the oral cavity, underscores how dental procedures can be a risk factor for distant site infections. This can happen by either hematogenous spread to the liver and subsequent contiguous spread to the lungs, or by initial lung infection from aspiration of the bacterium, precipitated by the dental work, which later extended to the liver. While the patient's chest X-ray and CT abdomen pelvis on presentation showed only a mild right-sided effusion, the limitations of these imaging studies must be acknowledged. Additionally, the patient's recent COVID-19 infection and underlying comorbidities may have predisposed her to a more severe infection,

suggesting a need for heightened awareness of opportunistic infections following viral illnesses. This case reinforces the importance of considering actinomycosis in the differential diagnosis of complex infections, particularly in immunocompromised individuals, and advocates for a multi-modal treatment approach, including long-term antibiotic therapy and drainage. Furthermore, it calls for more research into the vulnerability to opportunistic bacterial infections in the settings of COVID-19-related immune dysregulation.



[Figure 1] CT abdomen/pelvis with contrast demonstratingintrahepatic and perirenal abscesses, sagittal view



[Figure 2] Image depicting Actinomyces bacteriaobserved through a microscope, highlighted using Gram staining technique.

Primary Campylobacter Jejeni Colitis Masquerading as Clostridium Difficile Pseudomembranous Colitis: A Case Report

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Introduction

Pseudomembranous colitis (PMC) is a frequently observed endoscopic manifestation often associated with Clostridium difficile infection (CDI) but can also arise from other infectious and non-infectious causes, with Campylobacter being a very rare infectious trigger. This case highlights a patient who presented with abdominal pain and bloody stool along with endoscopic evidence of PMC caused unusually by Campylobacter Jejeni. To the best of our knowledge, this occurrence has not been reported in the literature.

Case Presentation

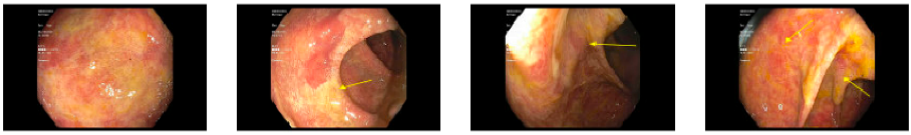
A 67-year-old female with a past medical history of colonic polyps, history of transient colitis during teenage years, hyperparathyroidism status post parathyroidectomy and osteopenia who presented to the GI clinic with complaints of persistent abdominal pain lasting over a one-month period associated with bloody stools/mucus. Labs revealed White blood cell count of 7.3, Erythrocyte Sedimentation Rate 6 mm/h, C-reactive protein 1.1 mg/l and fecal calprotectin: 52 mcg/g. Stool studies were negative for ova or parasites, salmonella, shigella, campylobacter and Clostridium difficile (Glutamate Dehydrogenase negative and toxin A/B negative). After ruling out infectious causes a colonoscopy was done which revealed Patchy moderate mucosal changes (resembling pseudo membranes) were found from transverse colon to cecum secondary to colitis and her terminal ileum was normal. Biopsy revealed active colitis with moderate to severe activity especially in the right colon. Colonic mucosa showed cryptitis, crypt abscess and no granuloma. Later that month, the campylobacter culture taken during colonoscopy came back positive. During the clinic follow-up, patient reported resolution of her diarrhea completely without any treatment. Two months after her initial presentation, a Cat scan enterography was performed, revealing no signs of acute focal inflammation in the bowel and a normal ileum.

Discussion

Campylobacter, a major global cause of diarrhea with around 1.3 million cases annually in the U.S., spreads through contaminated food, water, animal contact, and person-to-person. Symptoms include severe diarrhea, fever, and abdominal pain, with possible long-term fecal shedding of the bacteria. Diagnosis involves stool tests, and treatment is usually supportive, with antibiotics reserved for severe cases. On the other hand, PMC is a pathologic endoscopic finding that is commonly associated with CDI but can also be caused by various infectious agents such as bacteria, viruses, fungi, and parasites and non-infectious factors. In this scenario, a patient without any typical risk factors for PMC and with a distant history of colitis

in her teens was initially suspected to have late-onset IBD after testing negative for infectious causes. However, she subsequently tested positive for Campylobacter from a biopsy obtained during a colonoscopy. Her symptoms naturally subsided without intervention, and a follow-up CT enterography verified the resolution of previously observed inflammatory changes in the colon. This unique presentation emphasizes the importance of considering a wide range of causes for PMC and not restrict diagnostic considerations solely to CDI. To date, there have been no reported cases of campylobacter-induced pseudomembranous colitis. However, there are documented cases in the literature where Campylobacter has presented with features mimicking inflammatory bowel disease.

Patchy moderate mucosal changes characterized by congestion (edema) and mucus/pseudomembranes were found from transverse colon to cecum. Biopsies were taken with a cold forceps for histology (left and right colon).



2 Cecum : *Inflammation

4 Ascending Colon : *Inflammation

5 Ascending Colon : *Inflammation

7 Transverse Colon : *Inflammation

Unmasking the Enigma: A Case Report on Weil Disease

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Introduction

Leptospirosis is a zoonosis caused by the pathological genus Leptospira. It is thought to be the most widespread zoonosis in the world but a rare disease in the United States (100 to 150 cases are reported annually)1. Presentation of the disease can vary from a mild, influenza-like illness to multi-organ failure dysfunction. This case report aims to increase clinicians' awareness of this variation and to start empirical antibiotic treatment for suspected patients.

Description of the Case

A 37-year-old male with no known past medical history initially presented with weakness, A 37-year-old male with no known past medical history initially presented with weakness, muscle aches, and fever. Initial vital signs were stable except for sinus tachycardia. Physical examination was unremarkable except for scleral icterus. Pertinent positive lab results revealed leukocytosis, severe thrombocytopenia, elevated fibrinogen and d-dimer, acute kidney injury, and significantly elevated total and direct bilirubin. On the third day of admission, the patient was transferred to the ICU due to rapid deterioration, requiring high-flow oxygen and septic shock. Chest X-ray was remarkable for new bilateral airspace opacities. Chest CT showed multifocal consolidative and ground glass opacities with tree-in-bud nodularity. Due to severe shock, acute respiratory distress, and impending respiratory failure, patient was transferred to a tertiary medical center, and started on broad-spectrum antibiotics, vancomycin and cefepime. Liver biopsy showed signs of acute inflammation with lymphocytes and neutrophils. A presumptive diagnosis of Leptospirosis was made by using Modified Faine's criteria, and he was started on doxycycline. On the ninth day of admission, Leptospira antibody IgM returned positive. The patient responded well to antibiotics treatment, improving all parameters and was discharged home with outpatient follow-up.

Discussion

Most leptospirosis cases are mild with flu-like symptoms but in about 10% of cases also known as (Weil's disease) mortality rate are higher. This is characterized by hepatic dysfunctions associated with renal failure and hemorrhages 2. What made this case incredibly complex was that the patient did not have any ecological risk factors. A scoring system using Modified Faine's Criteria was found to be a helpful tool for diagnosing Leptospirosis in a resource-poor setting 3. High suspicion is essential to consider Leptospirosis as a diagnostic hypothesis because in its severe form, as happened to our patient, it can progress with fast clinical deterioration. Empirical treatment with antibiotics should be started when there is a suspicion.

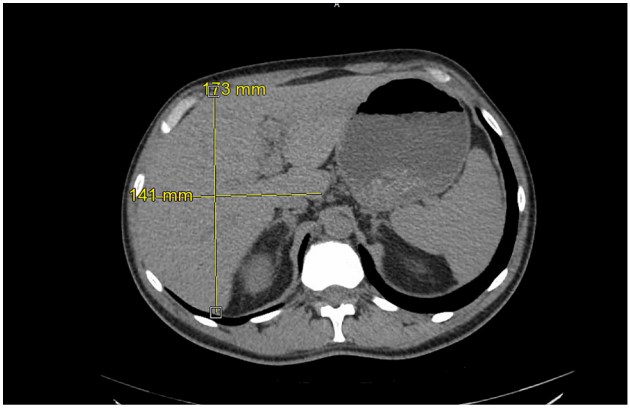

Figure-1: The CT abdomen axial view shows hepatomegaly measuring 173 mm x 141 mm

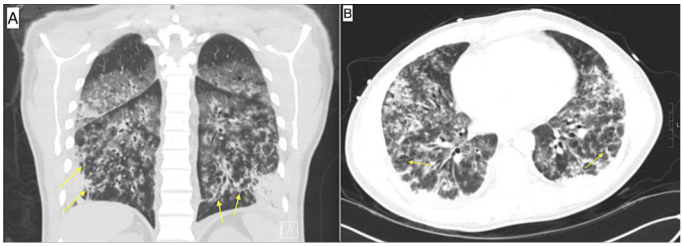

Figure-2: The CT scan of the chest shows multifocal consolidative and ground glass opacities with tree-in-bud nodularity (yellow arrows) in the coronal (A) and axial (B) views

Sudden Loss of SPO2 Waveform During Endoscopic Pancreatic Necrosectomy

Sam Lauffer, MD; Angela Tai, BA, Jessica Shanahan, MD

Introduction

Abdominal compartment syndrome (ACS) is a condition of elevated intra-abdominal pressures that limits end-organ perfusion. ACS has been observed in a variety of clinical settings, however the data regarding its incidence remains limited. Described manifestations include abdominal pain and distention, decreased urine output, and elevated airway pressures in mechanically ventilated patients. While these presentations are readily identifiable in awake patients, diagnosing ACS poses challenges in an obtunded, sedated or anesthetized patient.

Case Description

A 44-year-old female patient with past medical history of polysubstance abuse and pancreatitis, complicated by walled-off pancreatic necrosis, presented for elective pancreatic necrosectomy under general anesthesia. She underwent standard induction and endotracheal intubation and the procedure commenced without issue. Following ninety minutes of endoscopic insufflation, pulse pressure was noted to be narrowed with sinus tachycardia and loss of SPO2 waveform. Ten minutes later PEA arrest occurred, and ROSC was achieved after 3 minutes of CPR and immediate abdominal decompression via insertion of a 14-gauge angiocatheter. The patient underwent exploratory laparotomy, revealing a connection between the retroperitoneum and peritoneum at the site of necrosectomy. After a four-week hospital stay, the patient was discharged home and during a follow-up visit 2 months later, had made a full recovery.

Discussion (Learning Value)

Although upper GI endoscopy is a commonly performed procedure, it can rarely lead to disastrous complications such as perforation of viscera. Per the World Society of the Abdominal Compartment Syndrome, the gold standard of measuring intra-abdominal pressure is measurement of trans-bladder pressure via foley catheterization. However, using IAP $\geq$12 mmHg as a cut-off for elevated intra-abdominal pressure is neither sensitive nor specific for diagnosing ACS. In this case, ACS was diagnosed by a dangerous increase in abdominal pressure by identification of changes in vital signs, and thus promptly treated. Interestingly, tamponade physiology was noted despite an absence of elevated peak pulmonary pressure and may be attributed to the young age of the patient and high chest wall compliance. Anesthesia providers must be vigilant in monitoring patients during upper GI endoscopy and avoid relying solely on elevated peak pressures as a sign of increased abdominal pressure. Frequent abdominal examinations can assist in the detection of increased abdominal girth during periods of insufflation. Together with surveilling vital sign changes, this can alert providers to elevated intra-abdominal pressure prior to the onset of ACS.

Rare Obstetrical Complication of Paresthesia and Burning Pain in an L5 Dermatomal Distribution

Jennifer Cushman, William Tang

Introduction

Lower extremity nerve injuries and common fibular neuropathy are rare complications in pregnancy and childbirth. It can cause pain during and post pregnancy as well as lead to lasting complications long after giving birth. Lower extremity neuropathy can arise from three closely related causes: lumbar radiculopathy, lumbosacral plexopathy, or common fibular neuropathy. Complications of nerve compression and injuries related to pregnancy can cause paresthesia, hypoesthesia, numbness, weakness, atrophy, and diminished or absent deep tendon reflexes.

Case

This is a case of a 36 yo primigravida Female with the chief complaint of burning and paresthesia starting at her third month of pregnancy. Her complaints lasted throughout the pregnancy and after childbirth prompting her to be referred to pain management. She described diminished sensation in the L5 dermatomal distribution as well as on the top surface of the feet and complained of a burning uncomfortable sensation. She was encouraged to start on gabapentin and obtain an electromyography/nerve conduction study. She was also recommended to apply capsaicin to affected area. On MRI she was found to have a disc herniation affecting L5 nerve roo bilaterally.

Discussion

Lower extremity nerve injury and pain symptoms during pregnancy arise due to pathologies that can result from compression exerted by a herniated disc on nerve roots. This compression can be caused by the baby's positioning, macrosomia affecting the center of mass during ambulation, laxity of ligaments from relaxin, and if after birth can even be from medical personnel hand positioning during delivery on the patient's thighs and legs, and utilization of the dorsolateral lithotomy position. There have been reports of herniation of a lumbar disc (particularly at L4/L5 lumbar disc from extra weight gain and shifting of gravity to an anterior position during the pregnancy, and various biological changes and compressive factors that can alter the nerve as it travels around the fibula.

One of the infrequent yet significant triggers of neuropathies among women who have given birth is damage to the lumbosacral plexus root. These symptoms are a result of compression caused by a herniated disc which primarily occurs during the postpartum period. Hyper-flexibility and joint-relaxation resulting from hormonal shifts during pregnancy can also trigger radicular pain.

During delivery, as the baby's head descends into the pelvis, it impacts the lumbosacral trunk. The compression is usually on the L5 lumbar root, which in rare cases lead to weakness and even foot drop. However, lesions of the lumbosacral plexus can also affect the L2, L3, and L4 roots, manifesting symptoms reminiscent of damage to the femoral or obturator nerves.

Conclusion

This demonstrates a rare case of L5 nerve root radiculopathy as a result from a obstetrical complication from disk herniation.

The patient's symptoms improved after delivery and extensive Physical therapy.

It has been estimated that some of these nerve injuries and radiculopathies tend to occur in less than 0.92% of deliveries (5). Risk factors include cephalopelvic disproportion, fetal macrosomia, hormonal shifts and weight changes affecting the center of mass. These risks appear to be the greatest contributing factors in an obstetrical case given this patient having onset of symptoms in the first trimester with equal distribution of left and right leg in L5 dermatomal distribution.

Our sincerest gratitude for participating in this year's Annual Research Day put together by the department of Surgery.

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