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On The Cover: Student with Dr. Mary Dratman and technicians in the endocrinology lab. Image supplied courtesy of Drexel University College of Medicine Legacy Center. For more information visit archives.drexelmed.edu

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DEAN'S RECOGNITION

Congratulations on the 2019 edition of the *DrexelMed Journal*. Each year, we proudly share the scholarly work of the residents and fellows at Drexel University College of Medicine and our affiliate GME sites in this publication. The research and education missions of the University are crucial to the development of our physicians in training. I also extend my personal appreciation to the dedication and mentorship represented in this journal by our faculty in support of the academic mission of the training programs. Academic medicine is enriched by the spirit of scientific inquiry.

Thank you to all the authors and to the editors who contributed to this year's journal, and all the prior editions. It has been my honor to see your work every year.

Daniel V. Schidlow, MD
Annenberg Dean and Senior Vice President, Medical Affairs
Drexel University College of Medicine

Abstracts- Clinical Cases

1.What Happens in Vegas...

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INTRODUCTION: Infectious mononucleosis (IM) usually presents with fever, lymphadenopathy and pharyngitis. Although it routinely causes transaminitis, IM can rarely jaundice. We present an atypical case of IM with cholestatic jaundice. 31 year-old male presented to the ER for evaluation of epigastric pain, nausea and vomiting for 2 weeks. He noted diffuse myalgias and fever for the same duration. He reported a heterosexual encounter in Las Vegas, 2 weeks before the onset of these symptoms. Physical exam was remarkable for scleral icterus, enlarged tonsils without exudate but no cervical lymphadenopathy. Abdominal palpation revealed tenderness in right upper quadrant and epigastrium without rebound or guarding. Murphy's sign was negative. Laboratory work up revealed elevated bilirubin, transaminitis, atypical lymphocytosis, thrombocytopenia (see Table) and a positive monospot test. Testing for HIV, hepatitis A, B and C was negative. Cytomegalovirus Antibodies: IgG and IgM were negative. A CT scan of the abdomen revealed splenomegaly (19 cm) and hepatomegaly. An ultrasound was negative for gall stones with no intrahepatic or extrahepatic biliary dilatation. The patient was managed conservatively with intravenous fluids, ibuprofen and ondansetron. Symptoms and liver function were gradually improving at the time of discharge.

Parameter	Admission	Peak Cholestasis	Discharge
AST (U/L)	▲ 175	▲ 138	▲ 95
ALT (U/L)	▲ 232	▲ 185	▲ 149
ALP (U/L)	▲ 345	▲ 427	▲ 417
Bilirubin (T) (mg/dL)	▲ 6.7	▲ 8.8	▲ 7.9
Albumin (gm/dL)	3.5	3.1	3.1
INR	1.1	1.1	-
Hemoglobin (g/dL)	14.8	13.4	12.9
WBC (K/uL)	10.4	Table 1	
Differential (%)	32/30/40/10/0/0/0/0	20/20/1/1/0	29/53/7/0/0/0
N/L/M/E/B/Bands			
Atypical lymphocytes (%)	▲ 30	▲ 15	▲ 11
Platelets (K/uL)	▼ 88	▼ 111	▼ 131

DISCUSSION:

This case illustrates that IM can be an infrequent cause of intrahepatic cholestasis^{1,2}. Knowledge of this uncommon presentation of a common condition is crucial to avoid overly extensive and invasive (e.g liver biopsy) investigations. Testing for Epstein Bar virus should be performed for patients being investigated for cholestatic hepatitis in the appropriate clinical context.



Ref.

1. Hinedi TB, Koff RS. Cholestatic hepatitis induced by Epstein-Barr virus infection in an adult. DiDis Sci 2003;48:539-41.
2. Khoo A. Acute cholestatic hepatitis induced by Epstein-Barr virus infection in an adult: a case report. Journal of Medical Case Reports 2016;10:75.

2. Air in the wrong place : Emphysematous Gastritis

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Introduction: Emphysematous gastritis is a rare condition characterized by the presence of air within the gastric mucosa. It carries a high mortality rate of 60 % [1].

Case: 73-year-old female with past medical history of multiple strokes and diabetes presented with altered mental status, loss of appetite, hypotension and coffee ground emesis. Nasogastric tube placement revealed dark heme positive contents. Physical exam was notable for a soft but diffusely tender abdomen with reduced bowel sounds. Extremities were cold with decreased pulses and poor capillary refill. Blood work was remarkable for anemia, leukocytosis, metabolic acidosis with elevated lactate levels and deranged kidney function.

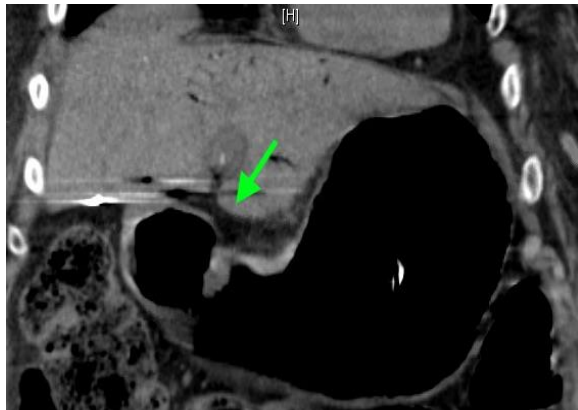


Figure 1

An abdominal CT scan revealed a distended stomach and air within the gastric wall, liver and in the vessels surrounding the stomach (Figure 1). Portal venous air was also noted (Figure 2). These findings suggest Emphysematous Gastritis. Subsequently, patient was intubated

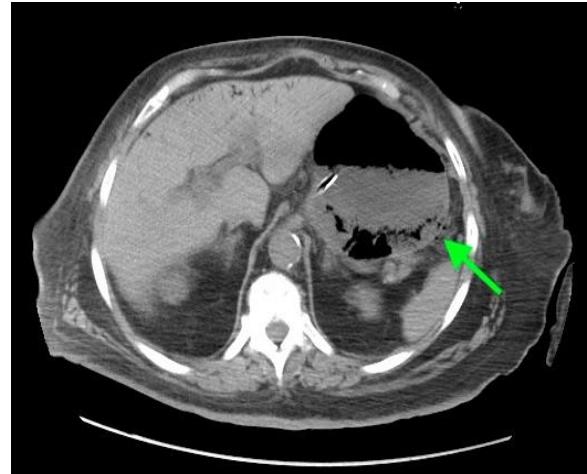


Figure 2

due to respiratory distress and hemodynamic instability. Surgical consultation suggested poor surgical candidacy and a guarded prognosis. The patient's family decided to pursue comfort directed care. The patient was palliatively extubated and transitioned to hospice.

Discussion: Emphysematous gastritis is a fatal condition caused by infection of the gastric wall by air forming organisms or by an ischemic process. The most common organisms are *Escherichia coli*, *Streptococcus*, *Enterobacter* and *Pseudomonas aeruginosa* [2]. CT scan is pathognomic for gastric intramural air. It is often associated with portal venous gas which is an ominous sign [2]. Surgical evaluation is required after this rare diagnosis is established.

Ref

1. Al-Jundi W, Ali. Emphysematous gastritis: Case report and literature review. *International Journal of Surgery* 2007;6:e66.
2. Misro A, Sheth H. Diagnostic dilemma of gastric intramural air. *Annals of the Royal College of Surgeons of England* 2014;96:e13.

3. Carbamazepine overdose: The Role of Lipid Emulsion Therapy

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Carbamazepine (CBZ) overdose is a cause of significant morbidity and disability. Few case reports have talked about the emerging use of intravenous Lipid emulsion (ILE) therapy. 30-year-old Caucasian male was found unresponsive with an empty bottle of 800mg carbamazepine extended release pills. He has a past medical history of bipolar disorder and prior suicide attempt. He had just refilled 120 CBZ pills. Nine hours afterwards, he was found unresponsive with a suicide note. He was emergently intubated. On examination, Blood pressure (BP) 138/96, Pulse 86, respiratory rate (RR) 18, and Oxygen saturation 100% on the ventilator. Creatinine Kinase level 322, CBZ level 35, and QRS complex was prolonged to 136 milliseconds. He was treated with Intravenous sodium bicarbonate and activated charcoal. He became hemodynamically unstable with severe hypotension nad BP dropped to 59/40 with associated abdominal distension. He was started on vasopressors, ILE, and afterwards continuous veno-venous hemofiltration (CCVH). Serum CBZ levels decreased steadily, and he was extubated on day 2 with no residual deficits.

CBZ is a widely used anticonvulsant and the extended release formulation in very high doses has shown a very erratic gastrointestinal absorption curve with the potential for delayed toxicity and delayed peak serum concentrations. CBZ is highly lipophilic and this could be responsible for the success seen with the use of ILE therapy. Given the response to ILE therapy seen in our patient, perhaps this could be more effective management modality with less side effects. Randomized, large-scale, placebo-controlled studies are warranted to establish the potential role of ILE in treating carbamazepine toxicity.

Ref.

1) Soderstrom J, Murray L, Little M, et al Toxicology case of the month: carbamazepine overdose Emergency Medicine Journal 2006;23:869-871.

2) Gaudins A, Peden G, Dowsett R P. Massive overdose with controlled-release carbamazepine resulting in delayed peak serum concentrations and life-threatening toxicity. Emerg Med 2002;1489-94.

3) Avcil M., Ozluer Y. E., Karaman K., Kapci M., and Kantekin B.. 2015. Treatment of Severe Carbamazepine Intoxication with Intravenous Lipid Emulsion Therapy. J. Pharmacol. Clin. Toxicol. 3:1052

4. Approaching the Treatment Cliff for C Diff: A Case of Recurrent Refractory Clostridium Difficile Infection Treated with Serial Fecal Microbiota Transplantation and Bezlotoxumab

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Clostridium difficile infection (CDI) remains the most common cause of infectious diarrhea in high-income countries. Studies support treatment with oral vancomycin or fidaxomicin and to consider fecal microbiota transplantation (FMT) for recurrent and/or refractory CDI (R-CDI) (1).

Herein, we detail the case of severe, antibiotic dependent R-CDI treated with FMTs and bezlotuxumab, an anti-toxin B monoclonal antibody.

A 62 year-old female with history of Crohn's Colitis in remission was administered oral

amoxicillin for a dental procedure. She developed loose bowel movements with CT demonstrating pancolitis. Positive stool toxin B for *C. Difficile* prompted treatment with oral vancomycin and intravenous metronidazole. Following a sigmoidoscopy demonstrating pseudomembranes, treatment was escalated to oral fidaxomicin, rectal vancomycin, and eventually FMT, resulting in symptom remission. Two weeks post-discharge, she was readmitted for R-CDI and treated with oral vancomycin and repeat FMT. On her third admission, sigmoidoscopy again demonstrated pseudomembranes prompting aggressive treatment with oral fidaxomicin, oral rifaximin, bezlotoxumab, and a vancomycin taper. At outpatient follow up, she reported experiencing two solid bowel movements daily. This case highlights the complex treatment options for severe R-CDI requiring serial FMT and bezlotoxumab. FMT is an investigational procedure with few studies focusing on serial FMT. Allegretti, et al demonstrated that only 5%

failed a second FMT (2). Our patient continued with active CDI despite two temporarily efficacious FMTs prompting toxin binding therapy. Indeed, the MODIFY I and II trials established that bezlotoxumab reduced rates of R-CDI (3). A higher suspicion of treatment failure is necessary with severe, prolonged presentations and gastrointestinal comorbidities.

Ref.

- 1) Miller JM, Binnicker MJ, Campbell S, et al. A Guide to Utilization of the Microbiology Laboratory for Diagnosis of Infectious Diseases: 2018 Update by the Infectious Diseases Society of America and the American Society for Microbiology, *Clinical Infectious Diseases*. 2018;67(6):e1-e94.
- 2) Allegretti JR, Allegretti AS, Phelps E, Xu H, Fischer M, Kassam Z. Classifying Fecal Microbiota Transplantation Failure: An Observational Study Examining Timing and Characteristics of Fecal Microbiota Transplantation Failures. *Clinical Gastroenterology and Hepatology*. 2018;16(11):1832-1833.
- 3) Wilcox MH, Gerding DN, Poxton IR, et al. Bezlotoxumab for Prevention of Recurrent *Clostridium difficile* Infection. *N Engl J Med*. 2017;376(4):305-317

5. Immunocompetent Individual with Varicella-Zoster Meningitis Treated with Oral Valacyclovir

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Introduction: Varicella zoster virus (VZV) is a neurotropic virus. Initially presenting as varicella, it may remain latent in cranial nerves, dorsal and autonomic ganglia(1). Reactivation usually causes herpes zoster, but rarely causes meningitis in immunocompetent individuals (2). Intravenous acyclovir is therapeutic. We present the case of an immunocompetent individual diagnosed with VZV meningitis successfully treated with oral valacyclovir. 61-year-old male with history of asthma and childhood varicella, presented for evaluation of bitemporal headaches with associated fevers for a week. He had recently traveled to Myrtle beach. On presentation his vital signs were within normal limits. Physical examination was remarkable for an erythematous circumferential

rash in his lower back. Initial lab work was unremarkable. Given concerns for meningitis he underwent a lumbar puncture. CSF studies revealed positive polymerase chain reaction (PCR) for Varicella-zoster virus. Investigations including HIV and immuno-deficiency testing were negative. Treatment with intravenous acyclovir was initiated, with resolution of symptoms. He was discharged on oral valacyclovir to complete a two weeks course of antiviral therapy.

Conclusion: VZV can cause meningitis in immunocompetent individuals. With the advent of PCR testing, atypical presentations are diagnosed. VZV should be considered in the differential and testing should be perused in

patients being evaluated for meningitis. Traditionally VZV meningitis has been treated with intravenous acyclovir, however uniquely our patient, and recent case reports have demonstrated the therapeutic effectiveness of oral valacyclovir (3). We recommend larger studies be pursued to assess the efficacy of oral valacyclovir.

Ref.

1. Gilden D, Mahalingam R, Nagel MA, Pugazhenti S, Cohrs RJ. Review: The neurobiology of varicella zoster virus

infection. *Neuropathol Appl Neurobiol.* 2011; 37(5):441-63.
2. Pasedag T, Weissenborn K, Wurster U, Ganzenmueller T, Stangel M, Skripuletz T. Varicella Zoster Virus Meningitis in a Young Immunocompetent Adult without Rash: A Misleading Clinical Presentation. *Case Rep Neurol Med.* 2014; 2014:686218.
3. Gnoni M, Zaheer K, Vasser MM, Singh M, Ajmeri A, Harter SR, et al. Varicella Zoster aseptic meningitis: Report of an atypical case in an immunocompetent patient treated with oral valacyclovir. *IDCases.* 2018

6.Opioid Overdose Mimicking Cocaine-induced Cerebellar Stroke in a Young Patient

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Introduction: Cocaine is a potent vasoconstrictor causing varied clinical manifestations including neurological ones (1). We present a case of cocaine-induced stroke complicated by severe hydrocephalus. A 28-year-old male is brought to the ED after he was found unconscious at home by his wife. His Past history is significant for ADHD, Depression, and IV drug use. He was given Narcan 2mg intranasally by EMS. Upon arrival to the ED, he was found very lethargic, was given another 0.4 mg of IV Narcan with improvement in cognition. Repeat VS: Pulse 81, BP 165/99, RR 15, Temp 98.1, Sat O2 95% (on RA). Patient was arousable to verbal stimuli. CBC, BMP, U/A - unremarkable. UDS was positive for opiates, cannabinoids, and cocaine. Admitted to general floor for a 24-hour observation and three hours later he was found unresponsive by nursing staff. VS: RR 10, BP 160/83, HR 90, Sat O2 95% on 4L. Upgraded to MICU where he had a tonic-clonic seizure. CT

head without contrast revealed a left-sided cerebellar infarct with severe hydrocephalus (Figure 1). He underwent an emergent suboccipital craniectomy and ventriculostomy. CT angiography of head/neck was unremarkable. On Day 7, ventriculostomy was removed. An extensive workup, including TTE/TEE, Vasculitis panel, Hypercoagulability panel, MRA brain, was unremarkable. Transferred to a skilled nursing facility on Day 22.

Discussion: In patient presenting with opioid overdose consider alternative diagnoses including cocaine-related complications. The combination of respiratory depression, bradycardia, and hypertension (Cushing's triad) should prompt an early workup for elevated intracranial pressure. (2)

Ref.1. Treadwell SD, Robinson TG. Cocaine use and stroke. *Postgrad Med J.* 2007;83(980):389-94.
2. Yeung J.T., Williams J., and Bowling W.M. (2013). Effect of cocaine use on outcomes in traumatic brain injury. *J. Emerg. Trauma Shock* 6, 189–194

7.A Giant Zenker's diverticulum: an incidental finding in a patient presenting with flank pain

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Introduction: Zenker's diverticulum (ZD) is a "false" diverticulum of the esophagus that is located immediately above esophageal sphincter. (1) Common symptoms include halitosis, food regurgitation, hoarseness, and recurrent airway infections. Diagnosis is usually made by barium swallowing studies. (2) A 54-year-old male with history of alcohol abuse and chronic smoking presented to the ER with right flank pain of 1-week duration. He also complained of dark urine and subjective fevers for 2 days. He denied any other active complaints. Physical exam, vital signs, CBC, CMP, and Urinalysis were all normal. CT abdomen and pelvis with contrast revealed an obstructing calculus in the right ureter with hydronephrosis. Interestingly, CXR showed a mass in the superior mediastinum. Subsequent CT chest with contrast revealed a distended cervical and proximal thoracic esophagus as well as a horizontally placed 0.6 x 3.8 cm foreign body, no perforation (Figure 1). An IR-guided right ureteral JJ stent was placed. EGD performed prior to extubation revealed a single giant diverticulum with a large opening in the cricopharyngeus muscle was detected. The foreign body resembling a chicken bone was successfully removed. The following day patient admitted to having had an occasional cough with food regurgitation into the mouth for 7 years. He was referred to ENT for repair of ZD.

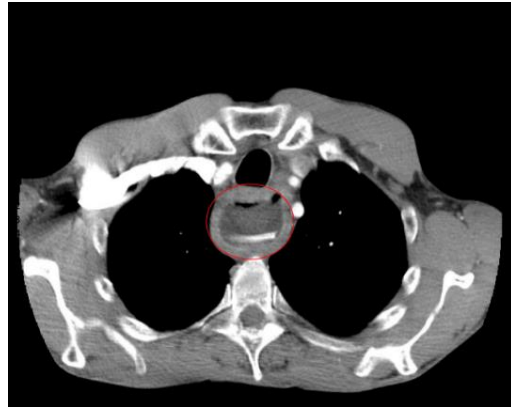


Figure 3

Discussion ZD is a risk factor for aspiration pneumonia. It can also bleed, perforate and rarely progress to squamous cell carcinoma. The mainstay of treatment in symptomatic patients is surgical correction. Flexible endoscopic interventions are also commonly used. (3).

Ref.

1. Hussain T, Maurer JT, Lang S, Stuck BA. [Pathophysiology, diagnosis and treatment of Zenker's diverticulum]. *HNO*. 2017 Feb;65(2):167-176.
2. Little RE, Bock JM. Pharyngoesophageal diverticuli: diagnosis, incidence and management. *Curr Opin Otolaryngol Head Neck Surg*. 2016 Dec;24(6):500-504.
3. Khullar OV, Shroff SR, Sakaria SS, Force SD. Midesophageal Pulsion Diverticulum Resulting From Hypercontractile (Jackhammer) Esophagus. *Ann. Thorac. Surg*. 2017 Feb;103(2):e127-e129

Abstracts- Research

1.Cardiac Rehabilitation Post Myocardial Infarction and Heart Failure

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Objectives: To evaluate the utilization of Cardiac Rehabilitation (CR) and factors that affect it.

Methods: An observational study using retrospective chart review and telephone survey of patients discharged from Abington Hospital for myocardial infarction (MI) or heart failure (HF). 450 patients admitted from June 2015 to June 2016 were randomly selected, only 44 met eligibility criteria. Data obtained were summarized using descriptive statistics.

Results: Of the 44 subjects, 20 had diagnosis of MI and 24 had HF. Only four out of Forty-four participated in CR. Out of these three were females, all caucasians, married, college educated with annual income above \$50,000. All four had MI and were seen by transition nurses (TNs). Three subjects were referred for CR by a medical liaison, one had no referral. Major reasons for not participating were lack of referral (38.6%), lack of motivation (18.1%), and knowledge about CR benefits (15.9%). Of the 44 subjects, 16 knew about CR (10 MI, 6 HF), 28 did not (10 MI, 18 HR). Only nine subjects (8 MI, 1 HR) were referred to CR (6 by medical liaison, 3 electronically automated). Although 24 subjects were seen by TNs (13 MI, 11HF), only four participated in CR.

Discussion: Our study indicates poor knowledge of and participation in CR which potentially reflects the nationwide situation (1). Major factors are non-referral, education and motivation. Mostly patients that had MI are being referred. A comprehensive discharge plan that involves initiating CR prior to discharge, automating referrals electronically, ensuring patient education and follow up is imperative (2)(3). New models of delivery should be pursued (4).

Baseline Characteristics (N=44)	Mean± Standard deviation
Age (years)	73±13
Length of stay (days)	6±4.4
	Frequency (%)
Gender	Male 20 (45%)
	Female 24 (55%)
Ethnicity	Caucasian 35 (79.5%)
	African American 8 (18.2%)
	Others 1 (2.3%)
Marital status	Married 26 (59%)
	Not married 18 (41%)
Health Coverage	Medicare 20 (45.5%)
	Medicaid 2 (4.5%)
	Private 22 (50%)
Education	None 0
	High school 14 (31.8%)
	College/graduate school 30 (68.2%)
Income	>\$50,000 26 (59.1)
	<\$50,000 18 (40.9)
Employment	Employed 11 (25%)
	Unemployed 1 (2.3%)
	Retired 32 (72.7%)

ELECTRONIC CHART REVIEW DATA

- **Demographics:** Age, gender, ethnicity, marital status, employment
- **Diagnosis:** MI (ST elevation MI/Non ST elevation MI) or HF (HF reduced EF/HF preserved EF)
- **Intervention:** PCI or CABG
- **mCVDRFs:** Hypertension, smoking, obesity, high cholesterol, diabetes mellitus and physical activity
- **Complication during hospitalization**
- **Healthcare coverage:** Medicare, Medicaid or private
- **Length of stay**
- **Disposition:** Home, home with home care or facility
- **Transition nurses**
- **CR Referral:** Automated vs Liaison

TELEPHONE SURVEY DATA

- **Knowledge of CR:** Aspects and Phases
- **Knowledge of mCVDRFs:** Hypertension, smoking, obesity, high cholesterol, diabetes mellitus and physical activity
- **CR referral:** Automated vs Liaison
- **CR participation:** Aspects and Phases
- **CR completion:** Aspects and Phases
- **Access to hospital:** Within 30mins drive
- **Follow up:** PCP or cardiologist
- **Education level:** High school or college
- **Family income:** Above or below \$50,000
- **Depression screen:** SIGECAPS

Ref.

- 1) Stevens M. Cardiac rehabilitation. Am Fam Physician. 2009;80(9):955-959, 960
- 2) Redfern J, Briffa T. Cardiac rehabilitation: moving forward with new models of care. Physical therapy reviews 2011;16(1):31-38
- 3) Sandesara PB, Lambert CT, Gordon NF, Fletcher GF, Franklin BA, Wenger NK, Sperling L. Cardiac rehabilitation and risk reduction: time to "rebrand and reinvigorate". J Am Coll Cardiol. 2015;65(4):389
- 4) Taylor RS, Dalal H, Jolly K, Moxham T, Zawada A. Home-based versus center-based cardiac rehabilitation. Cochrane Database Syst Rev. 2010

2. Does the Degree of Diabetes Control Determine the Admission Severity of Diabetic Ketoacidosis?

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Objectives: To determine whether the degree of diabetes control correlates with the admission severity of diabetic ketoacidosis (DKA).

Methods: A Retrospective chart review was performed for patients admitted with DKA to the medical ICU at Abington Memorial Hospital between January 1, 2017 and January 1, 2018. Laboratory Data required to determine an acute physiology and chronic health evaluation (APACHE) score, hemoglobin A1C, length of hospital stay was recorded. The APACHE score was used to determine the severity of disease at admission. Patients were divided into two groups: low severity (APACHE <15) and high severity (APACHE >15).

Results: A total of 50 patients were included in the analysis. The mean age of the patients was 47 yrs (range 17-85 yrs). 52%(n=26) of the population were males. The overall mean APACHE II at admission was 15 (range 3-28). The low severity group (APACHE <=15) and high severity group (APACHE >15) were equally

matched at 25 patients each. The mean APACHE scores were 9.9 and 18.7 for the low and high severity groups respectively. The mean hemoglobin A1C values for the low and high severity groups were 10.5 and 15 respectively. The average length of ICU/hospital stay was 1.6/3.65 and 1.54/3.61 days for the low and high severity groups respectively.

Conclusions: According to our study, a higher severity of DKA (higher APACHE) was associated with a higher hemoglobin A1C level. However, the study did not find any difference in the average length of ICU/hospital stay between the two groups.

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3. Pain Control for Interstitial Cystitis Patients Undergoing Pelvic Reconstructive Surgery

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**Drexel University College of Medicine: Department of Obstetrics and Gynecology

Background Interstitial cystitis (IC) is a chronic pelvic pain syndrome that is poorly understood. Scant research exists on pain control for IC patients undergoing pelvic reconstructive surgery (PRS). While these complex surgeries are typically performed under general anesthesia (GA), there are many benefits of using local anesthesia with monitored anesthesia care (MAC-LA). Our aim was to analyze our cohort of patients undergoing complex PRS and compare the intraoperative and postoperative courses to those with and without IC.

Methods: We performed a retrospective chart review of all PRS cases performed at a single site from 11/2015 to 7/2018. Joint cases were excluded. Data including demographics, intraoperative variables, medication requirements and postoperative courses were abstracted. Chi-squared, independent T and Mann-Whitney-U tests were used to compare IC vs. non-IC patients.

Results: Sixty-five separate PRS cases met inclusion criteria and were analyzed, with 57 individual subjects. The average age was 59. Thirty-three out of the 65 PRS cases were performed on IC patients. Thirty-one of 33 IC patient PRS cases were successfully performed under MAC-LA, and 2 required GA. IC patients did not require an elevated amount of 1% lidocaine with epinephrine, (average of 3.8 mg/kg) compared to patients without IC (2.8 mg/kg). There was no difference in length of operation, intra or postoperative complications, length of postoperative recovery, postoperative narcotic medication consumption, or length of hospitalization.

Conclusions: Complex PRS can be safely performed on chronic pain patients with IC using MAC-LA, without any increased morbidity or difficulty with intraoperative pain control.

4. Pelvic Reconstructive Surgery Performed with Monitored Anesthesia Care and Local Anesthesia

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Background: Pelvic reconstructive surgery (PRS) for pelvic organ prolapse is typically performed under general anesthesia (GA). Data is lacking on the efficacy of performing PRS under monitored anesthesia care with local anesthesia (MAC-LA). Because MAC-LA leads to faster recovery with less side effects, there is a role in expanding its utilization. Our aim is to review the PRS cases performed at our institution, for which MAC-LA is generally used, focusing on pain control.

Methods: A retrospective chart review of all PRS cases performed at a single site from 11/2015 to 7/2018 was performed. Joint cases were excluded. Demographic, intra-operative and post-operative data was analyzed.

Results: Sixty-five separate PRS cases were analyzed, involving 57 subjects. The average age was 59. A large proportion of patients had medical comorbidities (37% with cardiovascular

and 22% with respiratory disease), and chronic pelvic pain syndromes (65%). Fifty-nine of the PRS cases were performed under MAC-LA and 6 required GA. No patient required LA above the recommended limit. For MAC-LA surgeries, the average length of hospitalization was 1.1 nights, and the average postoperative Morphine Milligram Equivalent consumption was 20.9 mg, as opposed to 3.2 nights and 157 mg for GA

surgeries respectively. Intra-operative and post-operative complications (8% and 11% respectively), were rare and minor.

Conclusions

Complex PRS can safely and effectively be performed under MAC-LA in a population with a high proportion of medical comorbidities and chronic pain.

5. Gynecological Associated Disorders and Management

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Background: Chronic pelvic pain syndrome is complex and involves multiple organ systems. The gynecological aspects of chronic pelvic pain syndrome can be divided into four different areas: intra-abdominal, vaginal, pelvic floor muscles and sexual pain. This article provides an overview of gynecological evaluation in patients with chronic pelvic pain and reviews the most common gynecological diagnoses and their management.

Methods: An extensive review of the literature including guidelines from the International Continence Society (ICS), the European Association of Urology (EAU), and the International Association for the Study of Pain (IASP) was performed.

Results: Gynecological evaluation of patients with chronic pelvic pain begins with a thorough history and physical examination. Laboratory tests, imaging studies and diagnostic procedures can be used as adjuncts to make a diagnosis. Treatment modalities include physical therapy, medications, trigger points injections, and surgery.

Conclusion: Common gynecological diagnoses of chronic pelvic pain include endometriosis, adenomyosis, vulvodynia, high tone pelvic floor dysfunction, and genitopelvic pain/penetration disorder. Gynecology is one of the many systems that can be associated with chronic pelvic pain. Managing patients with chronic pelvic pain requires a multimodal and multidisciplinary approach.

Article

Continuous Glucose Monitoring Systems in Pregnant Patients with Type 1 Diabetes Mellitus

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The management of type 1 diabetes mellitus in pregnancy is a particularly challenging task. Technological advancements such as continuous glucose monitoring (CGM) systems have helped to improve glycemic control in patients with type 1 diabetes mellitus, but have yet to be approved for use in pregnant patients in the United States. An 18 year old woman with a history of type 1 diabetes mellitus since the age of seven years old presented to the obstetrics clinic after having a positive home pregnancy test and was directly admitted to the hospital for hyperglycemia due to an A1C of 12.9%. Endocrinology was consulted and her regimen consisting of once daily glargine with lispro before meals was switched to twice daily NPH with lispro before meals. She was counselled on the importance of strict glycemic control during pregnancy to prevent the risk of complications. Following discharge from the hospital, she was scheduled to have weekly follow up with endocrinology for further diabetic care.

Although her A1C improved to 8.1% within two months, a review of her point of care blood glucose measurements from her glucometer indicated that she was still experiencing frequent episodes of hyperglycemia and hypoglycemia. This glycemic variability was believed to be related to her extremely poor and inconsistent diet. Despite multiple dose adjustments and attempts to educate the patient on lifestyle modifications, her blood glucose levels remained labile. A CGM system called the Dexcom G6 (Dexcom, Inc., San Diego, California) was prescribed off label in order to obtain more information regarding her glycemic excursions.

Figure 1 represents the patient's glucose tracing the day before her appointment. This tracing was reviewed with the patient and her glycemic excursions were discussed in detail. The

importance of making better dietary choices was stressed and adjustments were made to her insulin doses. Figure 2 represents the patient's glucose tracing the day after her appointment. It clearly demonstrates improved glycemic control following interventions that were made based on review of data from her CGM system. The management of type 1 diabetes during pregnancy is accompanied by a unique set of challenges. Hormonal changes during pregnancy result in changing insulin requirements from the time of conception until the time of delivery. There is generally an increase with insulin requirements between gestational weeks 1 and 8 followed by a decrease between gestational weeks 9 and 16 (3). From gestational week 16 until birth, production of human placental lactogen impairs maternal sensitivity to insulin and this rapidly increases insulin requirements (3).

Risks of poor glycemic control during pregnancy include spontaneous abortion, fetal demise, fetal anomalies, macrosomia, neonatal hypoglycemia, neonatal hyperbilirubinemia, and preeclampsia (1). Strict glycemic targets are recommended for pregnant patients compared to the general population in order to minimize complications and promote better outcomes (3). For pregnant patients, the fasting blood glucose goal is less than 95mg/dL, the one hour postprandial blood glucose goal is less than 140mg/dL, and the two hour postprandial blood glucose goal is less than 120mg/dL (3). It is recommended that women have an A1C of less than 6.5% prior to conception and the target A1C in pregnancy is less than 6% if it can be achieved without hypoglycemia (3). Due to increased red blood cell turnover, it is recommended that A1C be checked monthly

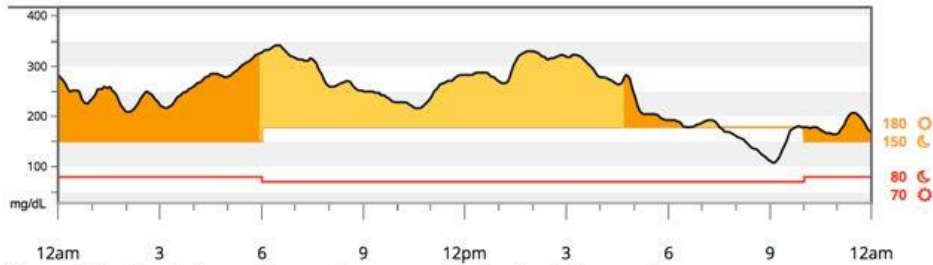


Figure 1: Tracing of glucose from continuous monitor the day before appointment.

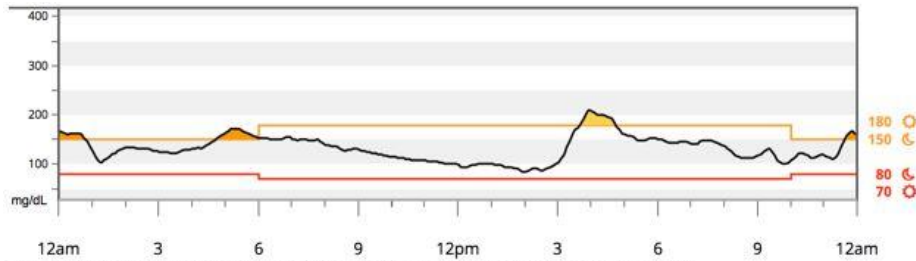


Figure 2: Tracing of glucose from continuous monitor the day after appointment.

during pregnancy (3). Finally, a rapid reduction of blood glucose may result in worsening retinopathy requiring close follow up with ophthalmology (3). Several types of CGM systems have been approved for use in patients with type 1 and type 2 diabetes mellitus. Most of these systems involve a subcutaneous sensor which estimates average glucose approximately every 5 minutes (2). While there is no data indicating CGM systems are less effective or dangerous in pregnant patients compared to nonpregnant patients, it is a population that has not been studied well (2). The CONCEPTT study published in the Lancet in 2017 randomized 325 type 1 diabetic patients who were pregnant or were planning pregnancy to routine point of care blood glucose measurements with and without a CGM system (2). Patients spent more time in the target range (68% compared to 61% with $p < 0.05$) and reduction in A1C was greater at 24 gestational weeks (-0.67% compared to -0.52% with $p < 0.05$) and 34 gestational weeks (-0.54% compared to -0.35% with $p < 0.05$) with CGM use (2). Fewer severe adverse events including

diabetic ketoacidosis, nausea, vomiting, headaches, respiratory, urinary, and obstetric complications were reported with CGM use as well (2).

Although CGM systems are not yet approved for use in pregnancy in the United States, a CGM system called the FreeStyle Libre (Abbott Diabetes Care, Inc., Alameda, California) has been approved for use in pregnancy in the United Kingdom. CGM systems can provide significantly more information than the current standard of care which is several point of care blood glucose measurements daily. Real time CGM systems also offer patients the ability to view their own glucose data in real time and respond accordingly. As demonstrated in the aforementioned case, the information obtained from CGM systems can lead to significant improvement in day to day glycemic control. It is likely that CGM systems will eventually be approved for use in pregnancy in the United States as more data is accrued to show their benefits.

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Clinical Case Reports

1. Management of hepatobiliary complications in a patient with Situs Inversus: A Case Report

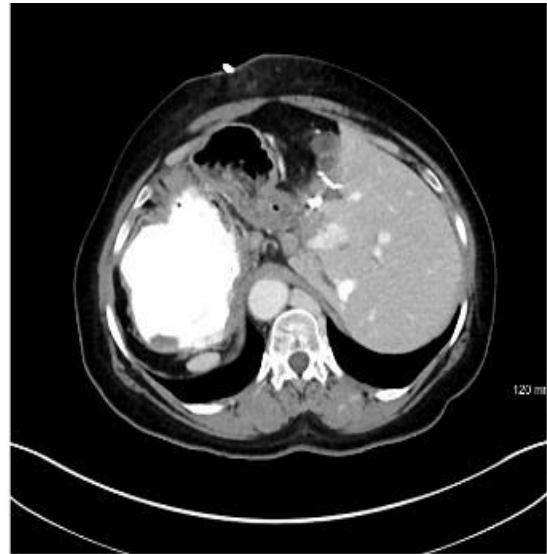
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Situs Inversus Totalis (SIT) refers to the inverted position of internal organs on the sagittal axis of the thorax and abdomen [1]. Gastrointestinal associations described in the literature include duodenal atresia, cholecystitis, choledocholithiasis, and adenocarcinoma of the distal common bile duct [2-5]. Here we present a case of SIT with complex hepatobiliary pathophysiology. 64-year-old female with past medical history of SIT presented with left upper quadrant (LUQ) abdominal pain. During the workup, she was found to have a hepatic cyst with biliary communication and underwent central hepatectomy, cholecystectomy and Roux-en-Y choledochojejunostomy. Eighteen years later, persistent LUQ abdominal pain and elevated labwork along with a Magnetic Resonance Imaging (MRI) showing intrahepatic biliary dilation near segment II/III. A single balloon enteroscopy assisted ERCP was performed. Cholangiogram showed intrahepatic bile duct dilation with a benign-appearing fibrotic structure, unable to be traversed. A double balloon enteroscopy was performed to the pancreaticobiliary limb, but the procedure was complicated by a small bowel perforation requiring endoscopic repair. Patient presented shortly after with acute cholangitis requiring percutaneous biliary drainage catheter from the dilated bile duct adjacent to segment II/III

with decompression (Figure 1). Decision was made for partial hepatectomy to remove strictured segment of the liver.



This case highlights the challenges in management of biliary complications in a patient with SIT. Endoscopic stent placement and surgical intervention are routinely done procedures. However, when applied to SIT, they can be challenging and rely heavily on the expert interdisciplinary management of the endoscopist and surgeon.

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2.Spontaneous pseudoaneurysm of the superficial femoral

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68 year old African American male with past medical history of hypertension and dyslipidemia with complaints of left leg pain and growing mass behind his left knee for 3 weeks. Denied any trauma or injury to the area and denies any recent vascular procedures.

A lower extremity angiogram showed the left distal superficial femoral artery with a 3cm x 2.5cm pseudoaneurysm with a 1.5cm neck. Given that the patient had no recent trauma or vascular access, it was deemed that the patient had developed a spontaneous left superficial femoral artery pseudoaneurysm. The neck of the pseudoaneurysm was too big for a stent placement and was decided to have vascular surgery evaluate the patient. Vascular surgery later evaluated the patient and surgically resected the pseudoaneurysm with patch angioplasty. A

pseudoaneurysm is a collection of blood that forms between the two outer layers of an artery and is usually caused by a penetrating injury to the vessel that then bleeds into an area formed by the outermost 2 layers. Pseudoaneurysms are not uncommon complications of vascular procedures. However, spontaneous pseudoaneurysms are an extremely rare entity and only handful of case reports have been reported in the medical literature (1). The reason behind spontaneous pseudoaneurysms has been believed to be related to atherosclerosis. Multiple case reports have found that cases of spontaneous pseudoaneurysms were more common in elderly patients with extensive peripheral arterial disease. It is believed that the pseudoaneurysms occur to weakening of the arterial walls from atherosclerotic changes (2).



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3. Cryptococcal meningitis - Entity not entirely limited to immunocompromised patients

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Introduction: Cryptococcosis is a fungal infection which varies in spectrum from being asymptomatic to fulminant infection (1). Mostly it occurs in immunocompromised patients like HIV/AIDS patients (2). The choice and duration of therapy vary if central nervous system (CNS) is involved.

Case: A 26-year-old male with no significant medical history presented to emergency room (ER) for evaluation of pleuritic chest pain, low-grade fever and myalgias. He recently traveled to Colorado where he was exposed to saw-dust, soil and mud. On his return, he started to have cough, fever and chills. Primary care physician prescribed 5-day course of Levaquin and Methylprednisolone pack which resulted in partial relief. In ER, CT scan of the chest showed left lower lobe infiltrate. Infectious disease team recommended sending fungal antigens

considering lack of response to antibiotics. Serum cryptococcal antigen was positive but HIV antibody was negative. Lumbar Puncture (LP) was done to exclude CNS extension and it was positive for cryptococcal antigen. He was given Amphotericin B and Flucytosine for 4 weeks and later Fluconazole for 6 months.

Discussion: Cryptococcus initially causes pulmonary infection. Healthy persons usually control the infection due to intact cell-mediated immunity. Immunocompromised persons are at risk for disseminated infection. Cryptococcal meningitis is a rare entity among immunocompetent hosts but, when it occurs, it is associated with significant morbidity and mortality (3). In patients with pulmonary cryptococcosis, LP should be performed to rule out CNS involvement, even in the absence of symptoms.

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4. Hematuria – Think Beyond Stones and Tumors

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Introduction: Hematuria is a common medical problem. Our mind reflexively starts to think about renal stones and malignancy of the urinary tract when a patient presents with this problem. We are presenting a case of hematuria which is unusual but treatable.

Case: An 82-year-old male with past history of hypertension presented to emergency room for evaluation of dysuria and reddish discoloration of

the urine for 1 month. He was not on any anticoagulation therapy. Imaging did not show renal stones or mass. Pertinent labs included hemoglobin 12.6, INR 1 and PTT 42. Cystoscopy revealed normal right ureteral orifice but left ureteral orifice showed bloody efflux with significant clot burden. Repeat labs showed Hb 6.8, INR 1 but elevated PTT 49.

Because of elevated PTT, other coagulation factors were checked. Factor IX and vWF were within normal limits but factor VIII was significantly low. A mixing study with normal plasma failed to normalize PTT. Factor VIII inhibitor level was really high so acquired hemophilia A was diagnosed. He was started on steroids, cyclophosphamide and rituximab and PTT normalized within 4 days.

Discussion: Acquired hemophilia A is a rare but potentially reversible cause of hematuria (1, 2). It should be in the differentials once other causes are ruled out. It can be idiopathic or from

autoimmune disease or malignancy. Treatment is to control bleeding with activated factor VIII/ VII or with prothrombin complex concentrate and to eliminate the inhibitor with immunosuppressive therapy (3).

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5. Pneumocystis carinii pneumonia prophylaxis -A practice not routinely practiced

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Introduction: Pneumocystis pneumonia is the most prevalent opportunistic infection in people with a weak immune system. It occurs mostly in patients with HIV/AIDS especially when CD4 count is less than 200 cells/mm³. Patients who are receiving immunosuppressive therapy are also susceptible (1).

Case: An 82-year-old male presented to the emergency room (ER) for evaluation of productive cough and shortness of breath for 1 week. He had past history of hypertension and acquired factor VIII deficiency due to inhibitor antibody for which he was on prednisone 40 mg daily for almost 2 months. In ER, he was found to be tachycardic, tachypneic and hypoxic (85% on room air). CT chest did not reveal pulmonary embolism but did show bilateral ground glass opacities. He was started on broad-spectrum antibiotics but his oxygenation did not improve. Pulmonology was consulted and it was decided to do bronchoscopy as the suspicion of pneumocystis infection was high. Bronchoalveolar lavage was positive for

pneumocystis infection. He was started on trimethoprim/sulfamethoxazole with improvement in oxygenation.

Discussion: Prednisone is frequently used to treat inflammatory disorders like temporal arteritis, rheumatoid arthritis, etc. Prednisone (≧ 16 mg dose) for a period of 2 months or ≧20 mg for one month with other immunosuppressive condition is associated with a significant risk of pneumocystis pneumonia (2) and is an indication of PCP prophylaxis. We, as clinicians, should always question ourselves regarding the dose and duration of steroid therapy. If we do this, we can certainly prevent this infection.

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6.A rare presentation of Pneumococcal bacteremia

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Introduction: Streptococcus pneumoniae is a gram-positive diplococcus which can cause both non-invasive (otitis media, sinusitis) and invasive (septicemia, meningitis) infections.

Pneumococcus has traditionally been the most common cause of community-acquired pneumonia (1). Invasive pneumococcal disease is confirmed by the isolation of *Pneumococcus* from a normally sterile site (eg, blood or cerebrospinal fluid).

Case: A 79-year-old male presented to emergency room (ER) for evaluation of change in mental status and worsening lower back pain for a week. He had medical history of hypertension and hyperlipidemia. He was practicing pediatrician by profession. In ER, he was tachypneic, tachycardic and febrile. Physical examination revealed diffuse rigidity in all joints and lower back tenderness. Blood tests showed elevated Lactate (3.9), Creatine kinase (33,000), sedimentation rate (130) and C reactive protein (390). He

was started on broad-spectrum antibiotics for possible central nervous system infection. MRI of the spine showed nonspecific edema of paraspinal muscles most likely myositis and an epidural enhancement at lumbar spine concerning for infection. Blood culture grew *Pneumococcus*. Antibiotics were narrowed down to ceftriaxone. He completed recommended duration of antibiotic therapy with resolution of pain.

Discussion: *Pneumococcus* is a well-known cause of bacteremia in both immunocompetent and immunosuppressed patients. The incidence of invasive pneumococcal disease increases with advanced age (2) and with certain underlying medical conditions such as diabetes, chronic heart failure and chronic lung diseases. Our patient was old and was not vaccinated against pneumococcal disease. Prevention from this infection is possible with pneumococcal vaccination.

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7. Purulent synovial fluid - Not always due to septic arthritis

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Introduction: Reactive arthritis is sterile synovitis which develops after a distant infection like genitourinary or gastrointestinal source. Common organisms are chlamydia, salmonella and shigella. Synovial fluid is mostly transparent or opaque in this type of arthritis (1). We are presenting a case of purulent arthritis which was found to be due to reactive arthritis.

Case: A 22-year-old male presented to emergency room (ER) for evaluation of right hip

pain and subjective fever for one week. The pain was exacerbated with hip movements and was partially relieved with rest and use of ibuprofen. He was tachycardic and febrile in ER. Imaging revealed right hip joint effusion which was found to be purulent when it was tapped. He was started on antibiotics for septic arthritis. Next day, he started to have right knee pain and Xray of the knee joint showed effusion which was also found to be purulent. Surprisingly, synovial fluid analysis showed inflammatory fluid (Synovial

fluid WBCs - 17832) and was not infectious. Crystal analysis and culture data were unrevealing. Rheumatology recommended sending HLA B27 which came back positive. Antibiotics were discontinued and he was started on steroid taper with much improvement.

Discussion: Reactive arthritis should be suspected in young adults presenting with mono or oligoarticular arthritis in the setting of preceding symptomatic infection. It should be considered in differential diagnosis of purulent

arthritis if the cultures are unrevealing. Antibiotic therapy is not indicated to treat reactive arthritis except for active *Chlamydia trachomatis* infection (2).

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8.Sphingobacterium spiritivorum – A rare culprit for lower extremity cellulitis

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Introduction: *Sphingobacterium spiritivorum* is an aerobic, nonmotile, non-spore forming gram-negative rod. It is found in natural environments like soil and water. It rarely causes infection in humans, but immunocompromised patients are more susceptible to this infection (1,2). We are presenting a case of cellulitis due to sphingobacterium.

Case: A 56-year-old morbidly obese male with history of hypertension and chronic lower extremity swelling was admitted to the hospital for evaluation of increased redness, warmth and swelling of both lower extremities. He had no leukocytosis but had low-grade temperature (100.7 F) on presentation. Imaging did not show deep venous thrombosis or deep tissue infection. He was started on vancomycin after getting blood cultures. Cultures grew gram-negative rods which were later identified as *Sphingobacterium*. Vancomycin was discontinued and he was given cefepime. The redness and swelling improved and he was discharged to complete ten day course of levofloxacin.



Discussion: *S. spiritivorum* is a rare causative organism of cellulitis with limited number of reported cases in the literature. In this case, morbid obesity and poor foot hygiene were found to be the risk factors for infection. Usually, blood cultures are positive in only 10% of the cases of cellulitis but to diagnose sphingobacterium, culture is a key. Cephalosporins and fluoroquinolones are the mainstay of treatment.

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9. Chronic mesenteric ischemia presenting as severe gastroduodenitis with ulceration, a case report

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A 70-year-old female with a past medical history of atrial fibrillation, peripheral vascular disease, hypothyroidism, hypertension, and coronary artery disease presented with a 2.5 months history of epigastric pain and 30-lbs weight loss. She had postprandial pain associated with nausea, vomiting, and non-bloody diarrhea. She had a 40-year pack smoking history but quit 12 years ago. She was vitally stable, abdominal examination was notable only for distension. One week prior, she underwent esophagogastroduodenoscopy and was found to have severe gastroduodenitis with ulceration and was placed on Protonix and sucralfate. Her symptoms were not relieved. She was placed on total parental nutrition (TPN). Labs revealed a white blood cell count of 22.3 k/UL; normal hemoglobin, lactic acid, and coagulation panel. A MR angiography of her abdomen indicated

severe stenosis to near occlusion of the celiac artery and severe stenosis to near occlusion at the origin of the superior mesenteric artery (SMA). She had a successful mesenteric angiogram with balloon expandable covered stent in the superior mesenteric artery, complicated by an episode of mesenteric ischemia in a short segment of bowel that resulted from athero-emboli plaque. She recovered well without further intervention. TPN was stopped as her diet was advanced. She was discharged on long-term aspirin and Plavix. Chronic mesenteric ischemia (CMI) occurs in patients with atherosclerosis but is rarely associated with gastroduodenitis due to the rich collateral to the stomach. We presented a case of severe gastroduodenitis due to CMI treated successfully with angioplasty that led to resolution of the gastroduodenitis.

Ref.

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10. Drug-induced Liver Injury Complicated by SMA Syndrome

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Introduction: We hereby report a case of drug-induced liver injury complicated by SMA syndrome.

Case: A 50-year-old female presented with chief complaint of jaundice, vomiting and abdominal pain gradually worsening for the past 3 weeks. Past medical history was significant for hyperlipidemia, alopecia, asthma and GERD.

Medications included low-dose statin, pantoprazole, minoxidil and OCPs. Physical exam showed icterus and mild abdominal tenderness in the right upper quadrant. She had normal CBC and renal function, with marked transaminitis (AST:1942, ALT:2913, Alk Phos:213, Total Bilirubin:11.9, Direct Bilirubin: 8.6). Serum drug screen, viral hepatitis panel,

CMV PCR, ANA screen, EBV antibodies, and HSV antibodies were negative.

Ceruloplasmin and alpha-1 antitrypsin levels were normal. CT Abdomen showed superior mesenteric artery syndrome. An IR-guided percutaneous liver biopsy suggested drug-induced liver injury. Later, the patient recalled ingestion of an herbal product called "Polygonum 14" for the past 8 months. The patient received supportive care and underwent placement of a gastro-jejunostomy tube. She had modest improvement in her LFTs (AST:891, ALT:1835, Alk Phos:135, Total Bilirubin:12.2). She was discharged home with close follow-up as an out-patient.

Discussion: Drug-induced liver injury is a commonly encountered diagnosis. While this patient was on a statin and an OCP, she had been on these medications for several years, making them the cause of her presentation unlikely.

Ref.

1) Zhang P, Ye Y, Yang X, Jiao Y. Systematic Review on Chinese Herbal Medicine Induced Liver Injury. Evid Based Complement Alternat Med. 2016;2016:3560812.



Figure: CT Abdomen W Contrast demonstrating distension of stomach and duodenum consistent with SMA syndrome

Herbal formulations have long been known to cause liver injury, with disease severity ranging from mild transaminitis to fulminant hepatic failure [1]. SMA syndrome, however, has mostly been associated rapid weight loss [2]

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11. Intra-peritoneal Fat Infarction - A Rare Cause of Epigastric Pain

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INTRODUCTION: The greater omentum is a large apron-like fold of visceral peritoneum that hangs down from the stomach. It has varying amounts of fatty tissue. It acts as a physical barrier to the spread of infection.

CASE: A 49-year-old male presented to the emergency room (ER) for evaluation of sudden onset epigastric pain which started two hours ago before presentation. It was moderate in intensity, nonradiating and was aggravated by food. He denied fever, cough, nausea or vomiting. Abdominal exam elicited tenderness in the epigastric area with no rebound or guarding.



Bowel sounds were audible. Initial labs including lactic acid, complete blood count, complete metabolic panel and lipase were within normal range. CT scan abdomen and pelvis showed focal inflammation of the fat adjacent to the greater curvature of the stomach consistent with focal intraperitoneal fat infarction. He was given intravenous fluids and analgesics. Clear liquid diet was started the next day and diet was advanced as tolerated. He was discharged from the hospital on the third day of hospitalization in stable condition.

Ref.

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DISCUSSION: Torsion of the fatty appendages of the greater omentum is a rare entity that leads to severe abdominal pain. It can be recognized on ultrasound or CT scan (1). The condition is best managed conservatively with anti-inflammatory drugs and the early recognition of this may prevent unnecessary operative intervention to look for a source of abdominal pain. Rarely, it may lead to adhesion, peritonitis, necrosis, or abscess formation(2).

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12. Association between Giant Cell Arteritis and Acute Coronary Syndrome

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Introduction: Giant Cell Arteritis (GCA) is an immune mediated systemic inflammation of medium sized to large arteries. GCA as a risk factor for Acute coronary syndrome (ACS) and its association with antiphospholipid syndrome (APS) are not well understood.

Case: A 76 year old woman with no significant medical history was admitted for an acute onset of intermittent right sided headache, left sided blurry vision, and transient aphasia. Initial work up for stroke including ECHO was unremarkable. Biopsy of the right temporal artery showed transmural granulomatous inflammation consistent with GCA. Within a few hours after biopsy, she complained of chest pain and was found to have anterolateral ST segment elevation on EKG. She was taken for immediate cardiac catheterization which showed apical LAD

thrombosis with no significant stenosis. She was started on Heparin which later transitioned to Warfarin. She also had significantly elevated anticardiolipin antibodies (aCL), thus suggesting APS. She was started on Aspirin, metoprolol and losartan for her ACS and was continued on Prednisone for GCA.

Discussion: Some studies have shown an association of GCA with increased risk of ACS, peripheral vascular disease, and stroke (1, 2) whereas others showed no increased risk (3, 4). Increased aCL can be found in GCA, although its association with APS is not well established (5). It is important to establish if a correlation exists between APS, GCA, and ACS through further cases like this as it may impact therapy including initiation of a more aggressive cardiovascular risk modification in those diagnosed with GCA.

Ref.

1. Tomasson G, Peloquin C, Mohammad A, Love TJ, Zhang Y, Choi HK, et al. Risk for cardiovascular disease early and late after a diagnosis of giant-cell arteritis: a cohort study. *Ann Intern Med* 2014;160:73–80.

2. Ray J, Mamdani M, Geerts W. Giant cell arteritis and cardiovascular disease in older adults. *Heart* 2005;91:324–8.

3. Ungprasert P, Koster MJ, Warrington K. Coronary artery disease in giant cell arteritis: a systematic review and meta-

analysis. *Seminars in Arthritis and Rheumatism* 2015; 44(5):586-591.

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13. Unusual presentation of Neuromyelitis optica spectrum disorders

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Introduction: Neuromyelitis optica spectrum disorder (NMOSD) is a rare demyelinating inflammatory disorder affecting optic nerves and spinal cord which in most cases caused by antibodies against astrocyte aquaporin-4 water channel (AQP4-IgG). It can cause a variety of symptoms including optic neuritis, acute myelitis and/or area postrema syndrome (2).

Case: 37 year old female recurrently presented to the ED over a few days for nausea, vomiting and abdominal pain, lastly presenting with lower back pain, bilateral feet numbness and urinary retention for 5 hours. Her initial neurological exam was normal, but she required foley catheterization for retention. MRI of lumbar spine was initially done due to concern for cord compression, but it was normal. She then developed decreased sensation up to T4 dermatome with decreased strength in lower extremities. MRI of cervical/thoracic spine showed findings consistent with acute myelitis. Cerebrospinal fluid (CSF) demonstrated pleocytosis with high protein and glucose, but otherwise negative. She was given a 5 day course of methylprednisolone. AQP4-IgG later

came back positive. Her symptoms improved gradually even though her urinary retention persists.

Discussion: Diagnostic delay can occur when patients present with vomiting without neurological symptoms (1). Our patient initially presented with vague symptoms, but it is important to have proper diagnosis made immediately to prevent further permanent damage. Acute attacks are treated with intravenous methylprednisolone 1g for 3-5 days and plasma exchange for steroid refractory patients (3). Immunosuppressive therapies (azathioprine, mycophenolate mofetil, etc) have been shown to reduce disease activity and avoid further attacks (3).

Ref.

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14. Isolated lymphadenopathy can be Tuberculosis

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Introduction: Tuberculous lymphadenitis (TBL) is a frequent manifestation of extrapulmonary tuberculosis (TB)(1) . Most cases in developed countries, occur among immigrants from TB-endemic regions (2), commonly affecting individuals in the 20-40-years range(3) . Extrapulmonary TB may not manifest characteristic clinical symptoms and can present a clinical challenge.

Case: A healthy 37-year-old female, presented for evaluation of a painful mass in the right side of her neck, increasing in size over the past month. She denied fevers, admitted to chills, and night sweats. She had recently moved from Brazil. At presentation, she was afebrile, physical examination revealed a tender right supraclavicular mass.

CT scan of the neck done showed a conglomerate mass of necrotic right supraclavicular lymph nodes measuring 5.5 x 2.6 x 2.6 cm. Initially concerning for lymphoma, investigations including fine needle aspiration with flowcytometry, hematological studies and extensive infectious workup were unrevealing. Excisional lymph node biopsy (ELNB) revealed necrotizing granulomatous inflammation, with positive fluorescent stain for acid fast bacilli. Two months of rifampicin, isoniazid, ethambutol and pyrazinamide followed by four months of rifampicin and isoniazid was initiated.

Discussion: TB is amongst the top ten causes of mortality globally (4). Extrapulmonary TB can involve several organ systems. Diagnosing TBL can be challenging with diverse infectious and noninfectious entities, presenting similarly. ELNB with microbiological evaluation has the highest diagnostic yield (5), with studies supporting

complete excision (3). We recommend, physicians have a high clinical suspicion and consider tuberculous lymphadenitis as a differential, to limit potential morbidity and mortality.

Ref.

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3. Perlman DC, D'Amico R, Salomon N. Mycobacterial Infections of the Head and Neck. *Curr Infect Dis Rep*. 2001; 3(3):233-41.
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15.The Role of Exercise in Assessing Mitral Stenosis

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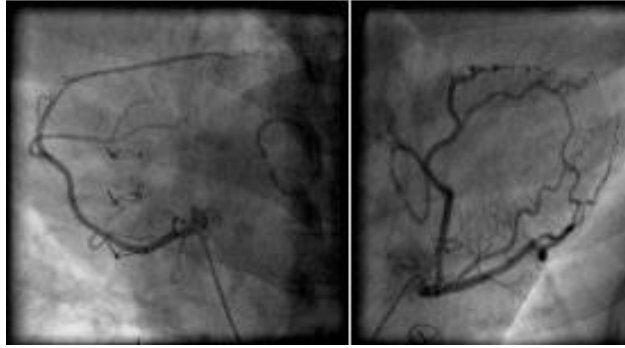
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Introduction: Mitral stenosis is a narrowing of the mitral valve that impedes blood flow between left atrium and ventricle.

An echocardiogram can gauge the severity of the stenosis. The treatment options may include surgery or percutaneous balloon mitral commissurotomy(1). An acceptable transmitral gradient for a mechanical mitral valve is 5-10 mmHg(2). Here we describe a patient with normal echocardiographic gradients on resting TTE.

Case: 36-year-old African American woman who had a mitral valve replacement at the age of 9. Patient presented to the cardiology clinic with complaints of prolonged course of dyspnea on exertion manifested by frequent stopping while walking a block. TTEs performed at rest demonstrated transmitral gradient 5-10 mmHg. A

cardiac catheterization was performed to evaluate the coronary arteries for possible blockages; the cardiac catheterization showed clean coronaries(Figure 1). Upon reassessment by cardiology, a stress echocardiogram was performed that demonstrated severe mitral stenosis. These stress hemodynamics were confirmed by cardiac catheterization with dobutamine infusion. A valve replacement was performed and patient demonstrated normal functional status thereafter. Patient now ambulates multiple blocks without dyspnea.



Conclusion: Although there are many culprits of dyspnea on exertion, a TTE alone may not be sufficient to assess for valvular functional status. Diagnostic testing at rest does not always appropriately assess a patient's functional status during activities of daily living. Exercise testing should be considered if high degree of suspicion. A stress echocardiogram with a stress gradient > 18 mm total or a >15 mm change should be considered(2,3) for intervention.

Ref.

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Bocchi EA. Dobutamine stress echocardiography for noninvasive assessment and risk stratification of patients with rheumatic mitral stenosis. *J Am Coll Cardiol* 2004;43:393-401.

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16.Reverse McConnell's sign: a rare TTE finding in pulmonary embolism

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Pulmonary embolism can cause right heart strain on echocardiography, which can aid in the diagnosis and management of the condition. In 1996, McConnell et al. first described the finding of right ventricular free wall akinesis with sparing of the apex in patients with acute pulmonary embolism (1). The reverse of McConnell's sign in acute pulmonary embolism is a rare echocardiographic pattern only described in a three other case studies (2). Therefore, we present a case of a 71-year-old male with a past medical history significant for metastatic colon cancer that presented with abdominal pain and found to have worsening metastatic disease. The patient had an episode of hypoxia and hypotension and was treated for septic shock with a pneumonia. He continued to have worsening oxygenation prompting a CT scan that

demonstrated an acute pulmonary embolism in the right superior and middle lobular branches. Transthoracic echocardiogram demonstrated a preserved ejection fraction without any left ventricular wall motion abnormalities. The right ventricular apex and middle segment were severely hypokinetic and the right ventricular proximal segment was hyperdynamic. The apical five chamber views of diastole and systole are shown in Figure 1 and Figure 2. Even in these still images, the hypokinesis of right ventricular apex is apparent. The mechanism of McConnell's sign is not completely understood, but similarities to Takotsubo syndrome of the right ventricle have been proposed (3). As demonstrated by this case, varying patterns of right ventricular involvement in acute pulmonary embolism are important to recognize on echocardiography.



Fig 1

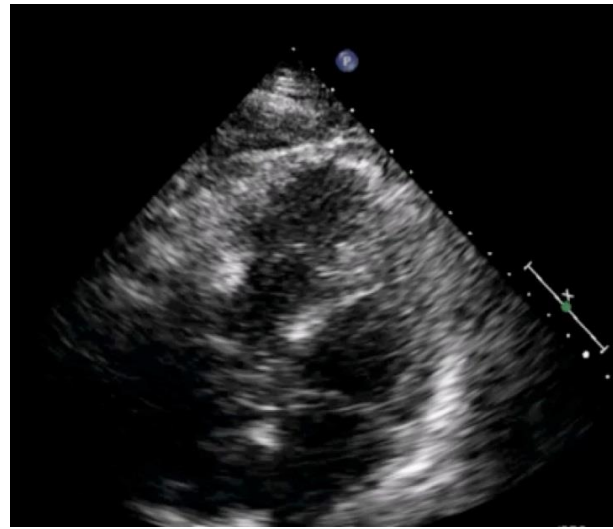


Fig 2

Ref.

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17.High risk percutaneous coronary angioplasty in patient with ST elevation myocardial infarction

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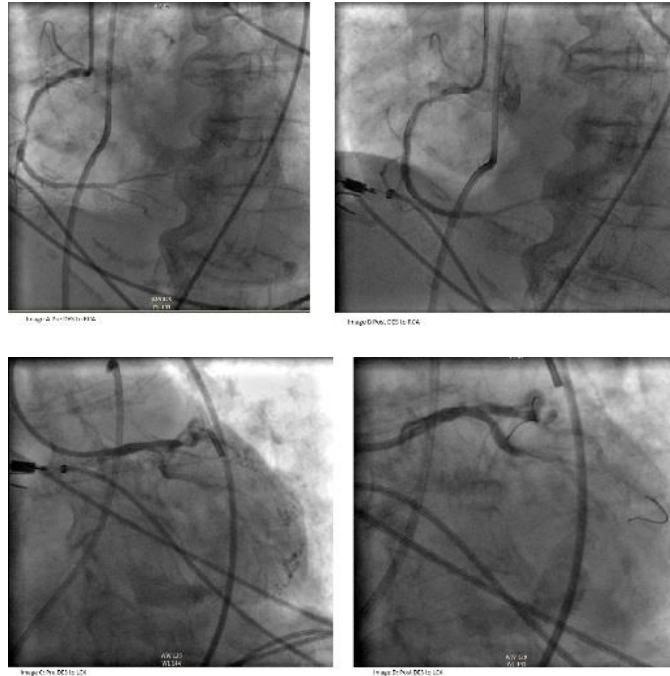
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Introduction: High risk PCI using drug eluting stents (DES) is an effective alternative to coronary artery bypass (CABG) in treating triple vessel coronary artery disease (CAD).

Case: 88-year old female with a history of severe aortic stenosis presented to an outside hospital with

shortness of breath. EKG showed lateral ST elevation myocardium infarction (STEMI). Catheterization revealed triple vessel disease with 100% stenosis of the left anterior descending artery (LAD). Balloon angioplasty of the LAD was

performed to stabilize the patient and she was transferred to our hospital for CABG. Upon admission, she was in cardiogenic shock and acute respiratory failure. Patient was stabilized with vasopressors and repeat a catheterization was performed. CT surgery deferred CABG as the LAD was patent, and the other vessels were unamenable for bypass. High-risk PCI was performed with two DES in the right coronary artery (RCA) and one in the left circumflex artery (LCX). She had a successful recovery.



Discussion: CABG has been shown to have decreased risk of cardiac death and repeat revascularization five years post-operatively, making it the gold standard for CAD treatment. (1). Multi-vessel PCI is currently only indicated in hemodynamically unstable patients with acute MI found to have multi-vessel disease (2). Since the patient was not a bypass candidate, options were limited to medical management versus waiting for her to become eligible for a CABG, putting her at

risk for a repeat MI. By performing a PCI, the patient was stabilized and adequate perfusion of the RCA and LCX was achieved. Ref.

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2. Widmiskuy P, Homles D. How to treat patients with ST-elevation acute myocardial infarction and multi vessel disease?. *European Heart Journal.* 2011;32:396-403.

18. Disseminated Kaposi's Sarcoma in an advanced HIV patient: Treatment Challenges

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Kaposi Sarcoma remains one of the most common AIDS related cancers in the world (1). The cancer incidence burden of Kaposi's Sarcoma in HIV patients is declining with estimated cases in 2020 being 540 and in 2030 being 240 (2). Recommended treatment for epidemic Kaposi's Sarcoma (KS) is antiretroviral therapy. However, refractory KS often requires chemotherapy (3). We present the case of a young 24 year old male presenting to the

emergency department with complaints of a right sided neck swelling. CT of the neck revealed that he had a large cervical neck mass that was positive for Kaposi's Sarcoma. Concomitantly, the patient was found to be HIV positive with undetectable CD4 count. Treatment began with antiretroviral therapy, however the patient had progression of KS. Endoscopic evaluation revealed Kaposi's Sarcoma within the antrum of the stomach.

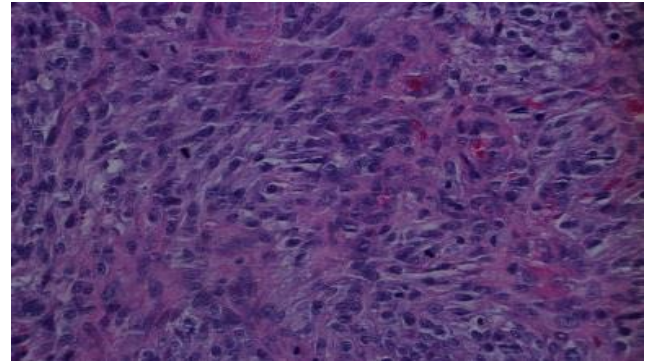
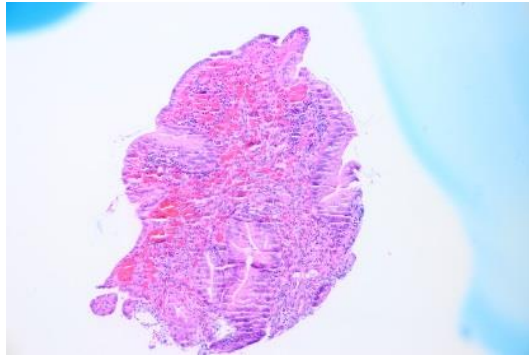


Figure (left): Kaposi's Sarcoma in gastric antrum

Figure (right): Prominent spindle cell component and atypical vascular channels associated with KS

He also had cutaneous lesions positive for KS on his legs. He was started on doxorubicin for treatment of visceral disease. Following chemotherapy, the patient developed multiple infections requiring delay of cytotoxic therapy. After a prolonged hospital admission, the patient died from overwhelming opportunistic and bacterial infection. The treatment of Kaposi's Sarcoma in advanced HIV patients is a challenge, particularly in patients with leukopenia due to their immunosuppression. Although survival estimates of patients with HIV and KS have improved, the addition of chemotherapy is reserved only for patients with KS refractory to

antiretroviral therapy (2). Chemotherapy can cause severe pancytopenia which can predispose patients to lethal infections and other complications.

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19. Intranasal Heroin Induced Pancreatitis: A Rare Complication of a Common Drug

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Introduction: Although opioid-induced pancreatitis has been reported, most of these cases are associated with intravenous or oral opioid use. However, a rarer phenomenon concerns intranasal heroin-induced pancreatitis (1,2)

Case: A 49-year-old man with a history of heroin abuse presented with a 1-day history of mid-epigastric abdominal pain. He described the pain as 10/10 in severity, exacerbated by movement and associated with radiation to the back. A review of his home medications did not reveal

pharmacotherapy often implicated in pancreatitis. Physical exam was consistent with severe tenderness of the mid-epigastric region. His lipase at the time of admission was 739 U/L (upper limit of normal 160 U/L). A CT Scan of his abdomen revealed acute pancreatitis. His evaluation for common causes of pancreatitis was negative for choledocholithiasis, alcohol abuse, polypharmacy, recent infection, trauma, metabolic derangements or recent procedures. This prompted a careful evaluation of the etiology of the patient's pancreatitis; after literature review

and with alternative etiologies ruled out, the working diagnosis of intranasal heroin-induced acute pancreatitis was established. The patient was switched from hydromorphone to non-opioid analgesics (acetaminophen) The patient showed rapid clinical improvement and relief of pain; the patient was discharged without complications on hospital day five.

Discussion: This was a nearly missed diagnosis of pancreatitis given our patient's history of heroin abuse and our concern that he was simply

withdrawing from heroin. However, his elevated serum lipase and confirmatory CT scan enabled us to evaluate his pancreatitis and arrive at the appropriate etiology and thus treatment.

Ref.

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20.Acute on chronic disseminated intravascular coagulopathy

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Introduction: Disseminated intravascular dissemination (DIC) is a syndrome characterized by bleeding, thrombosis or both. Investigations suggest activation of the clotting and fibrinolytic systems(1). As opposed to acute DIC, chronic DIC can develop when blood is continually exposed to tissue factor. Coagulation factors and platelets are consumed, but production is compensated. We present a case of acute on chronic DIC(2).

Case: 88-year-old male with history of asthma, and untreated prostate carcinoma, was hospitalized for an asthma exacerbation. During the hospitalization he had an episode of hematemesis. Vitals obtained were within normal limits, with examination revealing diffuse abdominal tenderness. Lab-work revealed leukocytosis. Coagulation profile revealed a normal PT and PTT, however a proceeding fibrinogen levels were undetectable. A peripheral smear revealed schistocytes. Inference of

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chronic DIC was made. The hospitalization was further complicated by pyelonephritis, a drop in hemoglobin, platelets and coagulopathy with elevated PT and PTT. Diagnosis of acute on chronic DIC was established. Treatment with antibiotics, and bicalutamide for prostate carcinoma was initiated with eventual resolution of symptoms and lab abnormalities.

Discussion: Chronic DIC is associated with malignancies, arterial aneurysms, pregnancy and hemangiomata(3). The underlying prostate cancer was inculcated as a component of the DIC, accounting for the initial low fibrinogen levels, with the pyelonephritis precipitating acute DIC. Cancer-related malignancy resolves when the cancer is brought into remission (1). Chronic DIC, can present with a normal PT and PTT. Timely identification and treatment of the underlying cause is essential to outcome.

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21. Euglycemic DKA Precipitated by SGLT2 Inhibitor and Intermittent Fasting Diet

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Introduction: Euglycemic diabetic ketoacidosis (DKA) describes a rare phenomenon with an anion gap metabolic acidosis, blood glucose <250 mg/dL, and production of ketones. Sodium glucose transporter 2 (SGLT2) inhibitors have increased incidence of euglycemic DKA by increasing pancreatic glucagon release and decreasing the kidney's ability to excrete ketoacids (1).

Case: We present a case of a 50 year-old man with type II diabetes presenting with weakness and dyspnea at rest. Two weeks prior, he had started ertugliflozin. He also started an intermittent fasting diet with low caloric intake, resulting in 20 pound weight loss. On admission, his exam revealed sinus tachycardia and dry mucous membranes. Laboratory values notable for bicarbonate 6 meq/L, glucose 207 mg/dL, anion gap 23. Venous blood gas showed pH 7.047, pCO₂ 31 meq/L. He

had an anion gap metabolic acidosis with concomitant respiratory acidosis and non-anion gap metabolic acidosis. Beta-hydroxybutyrate was 98 mmol/L

His euglycemic metabolic acidosis was likely multifactorial secondary to SGLT2 inhibitors and starvation ketosis. He was treated with intravenous fluids and insulin with resolution of his metabolic abnormalities and dyspnea.

Discussion: Euglycemic DKA is a potential complication of SGLT2 inhibitors with incidence rates between 0.16 to 0.75 per 1000 patient years. It typically presents with emesis and abdominal pain (2). This can be precipitated by excessive alcohol, exercise, and strict dieting. Starvation ketosis can occur after 10-14 hours of fasting³. Increasing popularity of intermittent fasting diets may contribute to more cases of euglycemic ketoacidosis if combined with SGLT2 inhibitors.

Ref.

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2 Goldenberg RM, Berard LD, Cheng AYY, et al. SGLT2

Inhibitor-associated Diabetic Ketoacidosis: Clinical Review and Recommendations for Prevention and Diagnosis. *Clinical Therapeutics*. 2016;38(12):2654-2664.

3 Krapf R, Seldin DW, Alpern RJ. Clinical Syndromes of Metabolic Acidosis. In: *The Kidney*. 5th ed. Elsevier; 2013:2049-2111

22. The Essence of Malaria Prophylaxis for the Native Traveler

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Malaria is a common intraerythrocytic parasite endemic in the developing world with an estimated 212 million cases in 2015, resulting in 429,000 deaths according to the World Health Organization. We report two cases of falciparum malaria in returning travelers to the United States. The first patient is a 63-year-old male returning from Sierra Leone after 3 weeks with fevers, chills, rigors, and diarrhea for 5 days. He was

found to be tachycardiac, diaphoretic, and jaundiced. He had thrombocytopenia, hypokalemia and elevated creatinine, total and indirect bilirubin. Peripheral smear showed 1.5% of parasitemia. The second patient is a healthy 34-year-old male returning from Ghana after 4.5 months presenting with headaches and chills for 4 days. He was febrile to 101.5 but unremarkable physical exam. He had elevated transaminase

and thrombocytopenia. Peripheral smear showed 4.7 % parasitemia. Both patients were visiting their native countries and did not take chemoprophylaxis for malaria. Both were treated with 3 days of atovaquone-proguanil. The Centers for Disease control (CDC) reports that 93.3% of patients with malaria do not adhere to or take recommended chemoprophylaxis. Malaria is both treatable and preventable. Options for prophylaxis include atovaquone-Ref.

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2. Hill DR, Ericsson, CD, Pearson, RD et al. The Practice of Travel Medicine: Guideline by the Infectious Disease Society of America. Clin Infect Dis. 2016;43:1499-1539.
3. Mace KE, Arguin PM, and Tan KR. Malaria Surveillance -United States, 2015. CDC. 2018; 67: 1-28
4. WHO. Malaria. [Cited on 2019 Jan 10] Available from: <https://www.who.int/news-room/fact-sheets/detail/malaria>

proguanil, chloroquine, doxycycline, mefloquine and primaquine although chloroquine resistance has been confirmed in all areas except for Caribbean, Central America west of the Panama Canal, and some countries in the Middle East. These two cases highlight the importance of chemoprophylaxis for foreign visitors and travelers returning to their native countries because of the fatality of falciparum Malaria.

23. Dapagliflozin induced Euglycemic DKA

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Introduction : Euglycemic DKA is a rare but serious side effect of SGLT2 inhibitors.

Case : 48-year-old female with past medical history of Type 2 Diabetes Mellitus was admitted with nausea, vomiting and dizziness. Physical Examination was remarkable for Tachycardia and dry mucous membranes. Her lab work showed Blood sugar of 183 MG/DL, Anion Gap of 26 and Beta hydroxy Butyrate level of 123 MG/DL. Urine was also positive for Ketones. ABG showed a pH of 7.10 with HCO₃ of 6.4 mmol/L consistent with Metabolic Acidosis. She was started on Insulin Drip and IV fluids according to the DKA Protocol. For her Diabetes, the patient's medications at home included Dapagliflozin, Glipizide, Metformin, Glargine at bedtime and Novolog with meals. She reported being compliant with all her medications. Any triggers for DKA like infection Ref.

1. Simeon IT, Blau JE, Kristina IR. SGLT2 inhibitors may predispose to ketoacidosis. J Clin Endocrinol Metab. 2015;100(8):2849–52. Epub 2015 Jun 18.

were also ruled out. The patient's symptoms improved with IV fluids and Insulin drip. Her anion gap closed and she was transitioned to subcutaneous insulin.

Discussion: SGLT2 inhibitors (Sodium Glucose Cotransporter-2 inhibitors) like Canagliflozin, Dapagliflozin and Empagliflozin have been implicated in the development of Euglycemic Diabetic Ketoacidosis. Different mechanisms have been proposed including decreased renal clearance of ketones, increased release of counter-regulatory hormones like Glucagon and decreased insulin release in response to increased urinary secretion of glucose. Euglycemic DKA can be a challenging diagnosis. Clinicians should keep a high index of suspicion in patients on SGLT2 inhibitors who present with signs of DKA in the setting of euglycemia.

2. Ogawa W, Sakaguchi K. Euglycemic diabetic ketoacidosis induced by SGLT2 inhibitors: possible mechanism and contributing factors. J Diabetes Invest 2016;7:135–8.

24.Acute epiglottitis in the adult

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**Ponce Health Sciences University: Medicine

Case: 58-year-old man presented to the emergency department with complaints of multiple episodes of retching, one day of bloody vomitus and abdominal discomfort. Initial laboratory results raised concern for sepsis. CT of the neck examination revealed diffuse edema of supraglottic structures including epiglottitis and significant airway compromise (Figure 1). Patient

was intubated and admitted to the ICU for management. Epiglottitis was confirmed on laryngoscopic examination. Patient was extubated one day after intubation. Final diagnoses included acute epiglottitis, Mallory-Weiss tear, and sepsis secondary to acute viral gastroenteritis. The cause of epiglottitis was thought to be noninfectious.



Figure to left: Axial(A) and sagittal (B) CT images of the neck demonstrates the diffusely edematous epiglottis (arrows) with near complete airway obstruction

Discussion: Acute epiglottitis, also known as supraglottitis, is an invasive cellulitis involving the epiglottis and its adjacent structures (2). In recent years, the epidemiology of epiglottitis has shifted toward adults. The upper airway is more rigid and wider in adults, allowing for lower risk of upper airway obstruction and an easily overlooked initial presentation. However, the reported mortality rate is 18-21% (1). Although epiglottitis is primarily caused by bacterial infections, noninfectious agents such as viral,

caustic and thermal injuries have been reported (1). If left untreated, epiglottitis can progress to life-threatening airway obstruction. Therefore, it remains a diagnosis not to be missed in children or adults.

Ref.

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25.A Rare Case of Multiple Synchronous Congenital Cervical and Intracranial Vascular Anomalies

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INTRODUCTION: Multiple synchronous congenital cervical and intracranial vascular anomalies are rare and may represent a challenge for treating physicians. Although they are usually asymptomatic, it is important to be familiar with these variants when planning for interventions and assessing associated risks (1).
CASE: A 49-year-old male status post remote right mastoidectomy presents with drainage from the ipsilateral ear. Imaging studies revealed

recurrent cholesteatoma. Incidentally, multiple vascular anomalies were also identified, including hypoplasia of the left intracranial carotid canal and absence of the left cervical/ intracranial ICA; enlarged basilar artery, hypertrophy of the left PCOM supplying collateral flow to the left ACA and MCA; fenestrated left vertebral artery; duplication of the right cervical vertebral artery; low bifurcation/separate origins of the right ICA and ECA.

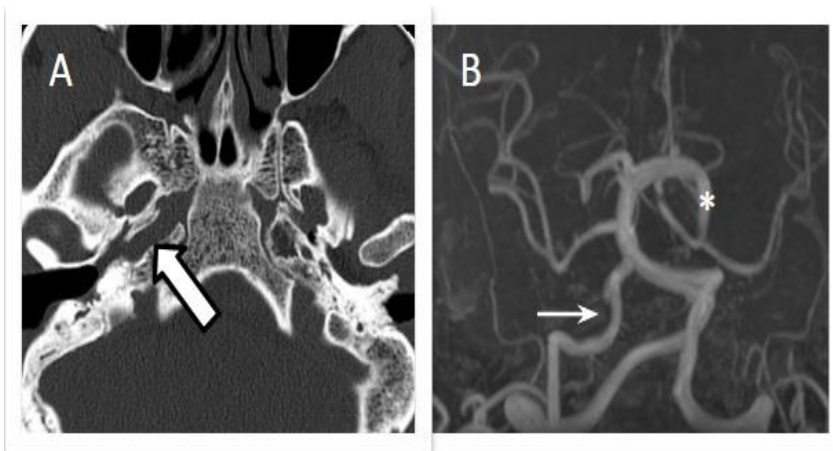


Fig 1 Axial CT through the level of the petrous ICAs(A) and MAR head MIP image (C). The right ICA canal is present (thick white arrow) whereas the left ICA (thin white arrow) and complete absence of the left ICA. Note enlarged left PCA/PCOMM (asterisk) which feeds the left MCA and ACA.

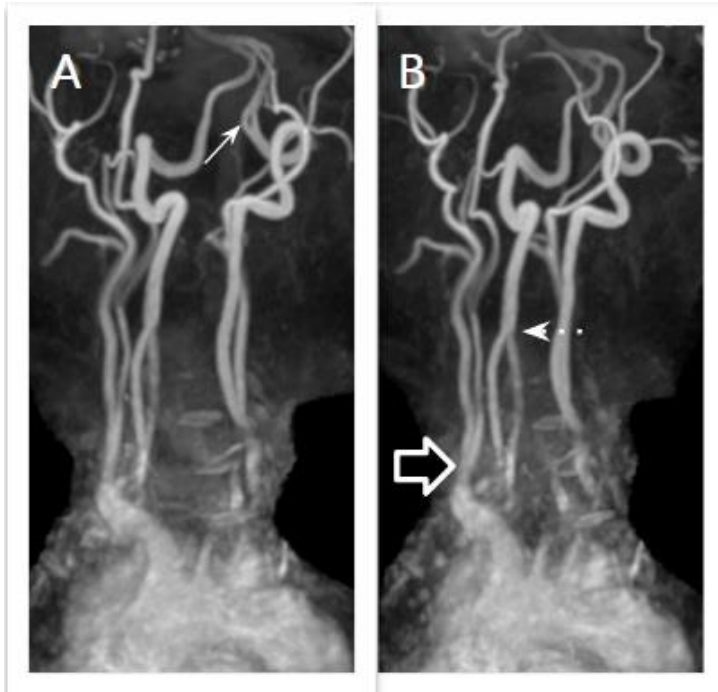


Fig 2. Noncontrast MIP images of the cervical arteries in oblique projections (A and B) to demonstrate the partial duplication of the right vertebral artery (dashed arrow), low common carotid bifurcation or separate origins of the right ECA and ICA (black arrow), and fenestration of the left vertebral artery (white solid arrow). Note the left ECA is present and the left ICA is absent

DISCUSSION: Isolated cerebral/cervical arterial developmental anomalies are uncommon with 0.01% incidence of ICA agenesis (1), 0.23-1.95% incidence of vertebral artery fenestration (4) and 0.295% incidence of vertebral artery duplication (2). It is exceedingly rare to find all of these anomalies in a single patient. The pathophysiology of these abnormalities is incompletely understood. During embryogenesis, the ICA develops from the 1st and 3d aortic arches and the paired dorsal aorta while the vertebral artery is formed by fusion of the longitudinal cervical intersegmental arteries. Incomplete regression of these vessels may explain these anomalies (3,4). Although most of the patients are asymptomatic, there is an increased risk of aneurysm formation associated

with ICA agenesis and vertebral artery fenestration and vascular dissection associated with vertebral artery duplication (4,5).

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26.Cavernous sinus thrombosis: a feared complication in the immunocompromised patient

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Introduction: Sinusitis is the most common source of infection in cavernous sinus thrombosis (CST). The most common signs of CST are related to the cranial nerves that traverse the cavernous sinuses (III, IV, V, and VI) and to impaired venous drainage of retinal and orbital vessels. The purpose of this case report is to review the clinical presentation and imaging features of CST.

Case: 92 year old woman with history of chronic

lymphocytic leukemia presented with altered mental status. Initial CT head was notable for complete opacification of the sphenoid and ethmoid sinuses with reactive sinus wall changes. Patient developed right orbital cellulitis and was found to have meningitis and cavernous sinus thrombosis. Following endoscopic sinus surgery, left sphenoid sinus culture was suggestive of *Aspergillus*.

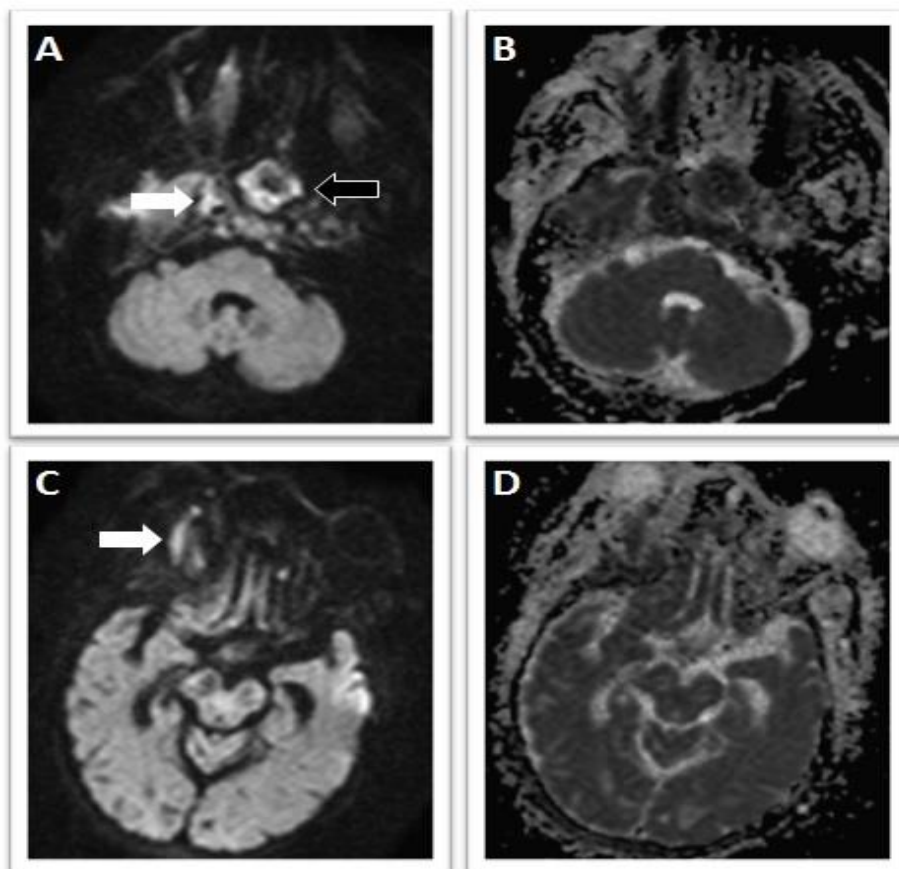


Fig 1 DWI/ADC at the level of the cavernous sinus (A and B) and at the level of the orbits (C and D) shows right cavernous sinus thrombosis and right superior ophthalmic vein thrombosis (white arrows) as evidenced by restricted diffusion. Note left sphenoid sinus disease (black arrow).

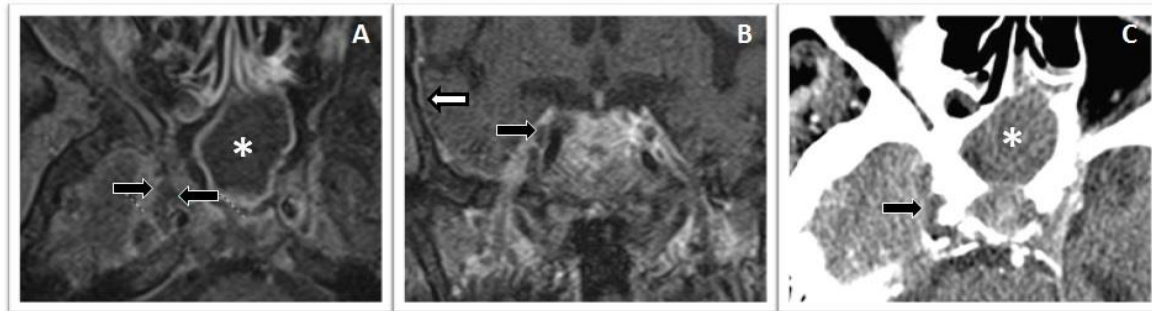


Fig 2 Axial (A) and coronal (B) postcontrast T1WI and axial CECT imaging (C) of the cavernous sinus shows filling defect in bulging right cavernous sinus consistent with thrombosis (black arrows). Note right convexity pachymeningeal enhancement (white arrow) consistent with meningeal spread of disease. Left sphenoid sinus disease (asterisks).

Discussion: Cavernous sinus thrombosis is a potentially lethal condition usually caused by bacterial or fungal invasion complicating sinusitis in patients with poorly controlled diabetes or immunosuppression. CST secondary to noninvasive sphenoid *Aspergillus* has been previously reported (1). The optimal diagnostic test is contrast-enhanced CT or MRI. Non-contrast CT of the head may reveal subtle abnormalities such as engorgement of the superior and/or inferior ophthalmic veins, bulging of the lateral margins of the cavernous sinus, exophthalmos, and sinusitis.

In the presented case, the thrombosed cavernous sinus was widened with filling defects indicative of thrombus on contrast-enhanced imaging, confirmed by restricted diffusion on DWI (2). CT or MR venography may be helpful in highly suspicious cases.

Ref.

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Medical Essays

1. Maternal Attachment Gone Renegade: Thoughts on the Evolution of Postpartum OCD

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The fields of evolutionary biology and psychology have been essential in redefining our understanding of both normal and pathological human behavior over the past decades. Models for the evolution of pathological traits have been suggested for a variety of disorders including bipolar disorders, depressive disorders, phobias, and addictive disorders. Models have also been proposed regarding the evolutionary biology of love. To our knowledge, few, if any, have considered the possible evolutionary underpinnings of postpartum obsessive compulsive disorder (OCD). Could an understanding of the origins of postpartum OCD help to normalize intrusive thoughts and decrease maternal guilt?

The biologic view of psychiatry asserts neuroanatomical and neurotransmitter functions are the driving force for both normal human behavior as well as pathological conditions, with psychological pathology arising in a small subset of people when the typical neurochemical mechanisms meant to protect the individual or the herd, undergo a glitch. Bipolar disorder is an excellent example, an evolutionary perversion of the biological processes leading to normal affect regulation [1] This disorder and its subtypes have also been hypothesized to stem from malfunctions in the processes of energy regulation and sleep cycle mechanisms [8] Normal behaviors that may be protective in some sense (extroversion, resiliency, curiosity, optimism, decreased need for sleep to ensure safety and satiety) can malfunction, pushing the system towards the extreme end of the spectrum, leading to the cardinal manifestations of mania. Another example of protective evolutionary measures gone awry is pathological anxiety. Of course, anxiety is hugely important in keeping organisms alive. It encourages harm avoidance, keeps us from approaching the pack of lions or from walking too close to the edge of a cliff. It tells

us to run from the stampede and the wasp nest. However, when taken to the extreme, anxiety can have detrimental effects on survival. When noradrenergic tone becomes too great, we may start to avoid stimuli that would not normally have to be averted. This only serves to reinforce ongoing anxiety, effectively crippling some essential human functions. An anxious person might refuse to leave the cave despite extreme hunger; might shake and jitter while aiming the atlatl at the cape buffalo; and rather than “fight or flight,” might freeze during the stampede. Specific anxieties, such as phobias, can also be seen as distorted traits that may have - at one time - been selected as a protective response. It should come as no surprise that the most prevalent phobias are of spiders and insects, and that there appears to be a large heritability risk for specific phobias [2, 9, 10]. Some speculate that even psychodynamic factors likely have an evolutionary origin. Although the heyday of the 1890s drive theory of pathology is gone and biologic theories of the mind are now more favorable, there has been interesting literature concerning how natural selection must have been biased towards the fittest mental operations—including defense mechanisms [6]. Perhaps the root of postpartum anxiety is aberrant evolutionary protection of some psychological traits, selected over millions of years for the benefit of the herd. About 1.5 percent of women in the general population meet criteria for OCD [4] Immediately following delivery, the rate of postpartum OCD jumps to 6.1% [3]. Another recent study showed that subclinical OCD symptoms were present in as many as 37.5% of new mothers (n=461) [5].

It might fall to reason that a mother’s frequent checking is protective for a newborn. Is he breathing? Is he sleeping? Is he still in his crib?

Avoid the loud, aggressive crowds. Avoid the fires and sheer cliff faces. Do not leave the cave if predators are around. Colloquial wisdom says that a mother does not carry her newborn child through the snake-infested grasses of the savannah down to the watering hole to drink with the rats and hyenas. The normal adaptive mechanism in the majority of cases works out just fine. But occasionally, as with other mental illnesses, distortions of protective neurobiological behaviors lead to pathology. A mother has to clean every bottle three times, or else fears her baby will die from a severe infection. She must dance around the fire counterclockwise five times to prevent her child from being attacked by a snake, and if she misses a step, she must start over. She begins to have unsettling thoughts of harming her baby and feels compelled to throw her knife out of the hut for fear that she may use it to harm her child.

Although speculation about the evolutionary underpinnings of modern mental illness is interesting, it is also fraught with imprecision. There has often been difficulty validating

proposed ideas, as these traits developed over millions of years, in a complicated world, with subjects who are now long gone. Furthermore, the human mind continues to be incredibly complex and, in some ways, elusive. It is tempting to overgeneralize and simplify our complex behavioral natures into catchphrases (ie., “fight or flight”). The truth is that there are twenty-five-thousand genes in our DNA that code for about one hundred thousand proteins in the central nervous system. Of these, only a few thousand proteins have been identified, and we only vaguely know their functions. At best, our available medication options in psychiatry might address one hundred of these [7]. While more research is necessary to fully understand complex protective evolutionary behaviors and their aberrations, some knowledge of where they come from is likely useful in providing education to those who are suffering. To normalize this phenomenon is simple enough: Although it is perfectly normal and adaptive for young mothers to scan an environment for danger, sometimes this protective factor goes renegade.

Conflict of Interest:

1. Benjamen Gangewere DO declares that he has no conflict of interest.
2. Sarah Homitsky MD declares that she has no conflict of interest.

Compliance with Ethical Standards:

1. Funding: This paper was not funded.
2. This article does not contain any studies with human participants or animals performed by any of the authors.

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2. Would you like to be resuscitated?

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“Oh my...” replied Mrs. Jones when she was asked if she would like to be resuscitated in the unlikely event that she suffered from a cardiopulmonary arrest. Mrs. Jones a healthy 82 year-old lady was being admitted for community acquired pneumonia. She did not have any significant medical history, and only took a multivitamin. When asked this question, the inquiring medical resident noticed a serious concern on her face, and her jovial smile was replaced by an uneasy frown.

To say that Mrs. Jones’ response was odd would be far from the truth. It is common practice for physicians to ask a patient their “code status” upon admission. It is a necessary step to ensure the healthcare team has recorded the patient’s wishes in the chart in case of any clinical deterioration. And while many patients from nursing homes already have documented resuscitation status, this may not be the case in patients without advance directives presenting from their home typically.

Which brings us to an important question: Is it best practice to address code status for the first time when a patient is admitted to the hospital?

Patients who visit the emergency room or are being admitted to the hospital are not always at their baseline health status. They are under

physiological, and often psychological, stress. Additionally, a vast majority of patients admitted to a hospital are not medically literate. It is thus reasonable to assume that their understanding of cardiopulmonary resuscitation is extremely limited, with most of prior information being gathered from electronic media, which usually depicts the event in a dramatic fashion. Similarly, one cannot expect such patients to have a deep understanding of mechanical ventilation. Often times, the image of mechanical ventilation in a patient’s mind might be one of prolonged dismay, sedated and “hooked up to a machine”, with no closure in sight. This has been shown in prior studies [1], with seriously ill patients displaying poor knowledge about cardiopulmonary resuscitation [2].

In light of the above discussion, it is perhaps unfair for patients to be asked this question for the first time at the bedside when they’re being admitted to the hospital. Patients deserve an adequate amount of time and information to make this important decision. This discussion should ideally take place in a calmer environment, with the person being at his/her baseline health status. It is perhaps also not unreasonable to keep this discussion outside the hospital walls. A better setting can be the primary care’s office, or even the person’s home.

Cardiopulmonary resuscitation is on the course of becoming more advanced in the near future. In Japan for example, the use of extracorporeal membrane oxygenation (ECMO) is being studied for out-of-hospital cardiac arrest [3]. The use of automated machines for chest compressions has also been studied [4], providing an alternative to the traditional provider-dependent technique.

With advancing technology, new survival data is set to emerge, that will potentially trigger an alteration in current guidelines. This makes it even more important to give people a chance to have these conversations in a relaxed setting, preferably with providers who they have known for a long time, with all the data available, and with the support of their loved ones.

Several barriers are present for healthcare providers as well to have discussion upon a patient's admission, with lack of time and lack of rapport being two prominent ones among residents, according to a study by Binder et al [5]. Amongst attending hospitalist physicians, the

median length of code status discussions has been found to be around 1 minute [6].

It would hence not be unreasonable to implement a "Discussion of Code Status" patient encounter in the outpatient setting, especially for our aging population. This might be as important as other preventative health measures that are now considered routine in the primary care physician's office. It should still be addressed every time a patient is admitted to the hospital. However, if the patient has already had an in-depth conversation on the topic before, one can expect him/her to make a decision that is more reflective of his/her wishes.

After a long pause, Mrs. Jones requested if she could think about this a bit more. She was discharged from the hospital two days later. Burdened by a busy service, the resident did not get a chance to address the question again. Mrs. Jones did follow-up with her primary care provider within a week of discharge. She talked about her recent hospitalization, her upcoming colonoscopy, and her dog.

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